

MARINE CORPS AVIATION: THE EARLY YEARS 1912-1940



HISTORY AND MUSEUMS DIVISION
HEADQUARTERS, U.S. MARINE CORPS
WASHINGTON, D. C.

FRONT COVER: Three SU-2 aircraft of Squadron VO-8M flying over San Diego in 1933. (Marine Corps Photo 530122).

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by
Lieutenant Colonel Edward C. Johnson, USMC

Edited by
Graham A. Cosmas



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FOREWORD

This brief history of Marine aviation from 1912 to 1940 describes the efforts of Marines to secure their own air arm and recounts the early development of the Marine air-ground team. The story is drawn from official reports, documents, and personal correspondence, as well as from published historical works. It also draws heavily upon the transcribed reminiscences of notable Marine aviators collected and preserved by the Oral History Section of the History and Museums Division.

Lieutenant Colonel (now Colonel) Edward C. Johnson, USMC, did the initial research for this history and wrote the first draft. Colonel Johnson received his Bachelor of Arts degree from the University of Wisconsin and is himself an experienced fighter pilot, squadron and group commander. He commanded VMFA-251 in 1969 when the squadron received the Robert M. Hansen Award for outstanding performance. Colonel Johnson came to the History and Museums Division in June 1970 from Vietnam, where he served on the staff of Marine Aircraft Group 13.

Additional research and editing of the manuscript were done by Carolyn A. Tyson and Captain Steven M. Silver, USMCR. Dr. Graham A. Cosmas extensively revised the manuscript and incorporated in it much primary source material not available when Colonel Johnson prepared the initial draft. Dr. Cosmas, who received his Bachelor of Arts degree from Oberlin College and his doctorate from Colonel Johnson's *alma mater*, the University of Wisconsin, completed the editing of the manuscript and prepared it for publication.

The History and Museums Division welcomes any comments on the narrative and additional information or illustrations which might enhance a future edition.

A handwritten signature in black ink, reading "E. H. Simmons". The signature is fluid and cursive, with the first name "E. H." written in a more compact, stylized manner than the last name "Simmons".

E. H. SIMMONS

Brigadier General, U. S. Marine Corps (Ret.)
Director of Marine Corps History and Museums

Reviewed and approved:
1 August 1977

PREFACE

From 1912, when First Lieutenant Alfred A. Cunningham became the first Marine to fly, through 1940, a handful of dedicated Marines worked to keep their Corps abreast of the progress of military aviation and to create an air arm specifically dedicated to supporting Marines in their amphibious mission.

From a few daring men and a handful of primitive aircraft in 1912, Marine aviation grew into a force which met the test of combat in World War I. During the 1920s and 1930s, Marine aviators gradually developed a permanent organization and acquired aircraft of increasing reliability and improving performance. In small wars and expeditions in Haiti, the Dominican Republic, Nicaragua, and China, Marine fliers devised new techniques for supporting Marine infantry in combat, and they demonstrated the value of aviation in reconnaissance and in the movement of men and supplies over rough and usually roadless terrain.

With the creation of the Fleet Marine Force in 1933, Marine aviation received formal recognition as an element of the amphibious air-ground team, and in the fleet landing exercises of the late 1930s began developing the doctrines and tactics which would make close air support a reality in World War II. The traditions of excellence and versatility established by these early Marine fliers lived on in the skies of Korea and Vietnam and remain vital today.

This study of the formative years of Marine aviation is based on official reports and documents in the archives and holdings of the History and Museums Division and on personal memoirs and correspondence, as well as published historical works. It draws heavily on the writings of such pioneers of Marine aviation history as Robert L. Sherrod and Major Edna Loftus Smith, USMCR, and has benefited significantly from the efforts of such organizations as the First Marine Aviation Force Association and the Marine Corps Aviation Association to preserve the memory and record of early Marine aviation.

Especially valuable in recalling this era to life were the oral reminiscences of distinguished retired Marine aviators transcribed and preserved by the Oral History Section of the History and Museums Division. Among others, the recollections of General Christian F. Schilt, Lieutenant Generals Karl S. Day and Francis P. Mulcahy, Major Generals Ford O. Rogers, Lawson H. M. Sanderson, and Louis E. Woods, and Brigadier Generals Edward C. Dyer and Daniel W. Torrey enriched the narrative.

The division owes a special debt of gratitude to those persons who furnished assistance, comment, and criticism on the initial draft of the history. Among them, Master Sergeant Roger M. Emmons, USMC (Ret.), Historian, Marine Corps Aviation Association, commented on the manuscript and furnished many valuable documents on World War I Marine aviation; we have borrowed much from his earlier writings on the period. Mr. Lee M. Pearson, Historian, Naval Air Systems Command, gave us extensively of his time and of his knowledge of early naval aviation. General Vernon E. Megee, USMC (Ret.), provided especially useful factual comments, and Master Sergeant Walter F. Gemeinhardt, USMC (Ret.), member of the staff of the Marine Corps Museum at Quantico, gave us the benefit of his detailed knowledge of early aircraft and the men who flew them.

Thanks are due also to Mr. Goodyear K. Walker of Sacramento, California, for providing the Kirkham photograph albums, selections from which have enriched the illustrations of our history, and to Colonel Houston Stiff, USMC (Ret.) of the Treasure Island Navy/Marine Corps Museum at San Francisco for bringing these albums to the attention of the Director of History and Museums.

This history could not have been written without the generous assistance of many members of the History and Museums Division. The writer and editors owe particular gratitude to Mr. Ralph W. Donnelly and Mr. Charles A. Wood for their aid in locating records and personal papers and to Mr. Benis M. Frank, head of the Oral History Section, for his guidance to these valuable sources. Mr.

Rowland P. Gill and Mr. Jack B. Hilliard searched out photographs to illustrate the text. The manuscript was prepared under the editorial supervision of Mr. Henry I. Shaw, Jr., Chief Historian, History and Museums Division. The manuscript was prepared for publication by Mr. Paul D. Johnston. Unless otherwise indicated, all photographs are from official Marine Corps/DOD holdings.



GRAHAM A. COSMAS



E. C. JOHNSON

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CHAPTER I.

THE BEGINNINGS, 1912-1917

Naval Aviators in a Different Uniform

Until the United States entered World War I, Marine Corps aviation had no permanent organization separate from naval aviation, and its history is interwoven with that of the rudimentary naval air arm. The first recorded Navy Department expression of interest in heavier-than-air flying machines dates back to 1898, when Assistant Secretary of the Navy Theodore Roosevelt, impressed by reports of the experiments of Professor Samuel P. Langley, tried to promote consideration of the military possibilities of aeronautics. He met a sharp rebuff from the Navy Department bureaus. For the next 12 years, while the Wrights flew at Kitty Hawk and aviation activity slowly increased in America and Europe, the Navy cautiously observed developments.

In 1910, a year after the Army bought its first plane from the Wright Brothers, the Navy Department assigned Captain Washington Irving Chambers, a veteran sea officer long interested in aircraft, to answer correspondence concerning aviation. Chambers had neither authority nor a staff, but he set out to awaken the Navy's interest in flight and to promote aeronautical research. He obtained important allies within the Navy Department, including the venerable Admiral George Dewey, and he developed a close working relationship with the aircraft builder and inventor Glenn Curtiss. On 14 November 1910, as a result of Chambers' and Curtiss' joint efforts, Curtiss' test pilot Eugene Ely made the first recorded takeoff from a ship's deck, flying from a platform erected on board the U.S.S. *Birmingham*. Two weeks later, Curtiss offered to teach a naval officer to fly at no cost to the government. The Navy Department accepted, and Lieutenant Theodore G. Ellyson, USN, reported for instruction to Curtiss' flying school and experimental station at San Diego, Califor-

nia. There he soon qualified as the Navy's first officer pilot.

The following year, naval aviation acquired more personnel and its first aircraft. With a Congressional appropriation of \$25,000, the Navy Department in 1911 purchased three planes—two from Curtiss and one from the Wright Brothers. The manufacturers trained an officer pilot and an enlisted mechanic for each aircraft, including Lieutenants John Rogers and John H. Towers, and they in turn began training others. Chambers secured establishment of a primitive aviation camp (a field, a few buildings, and a beach for launching sea planes) near the Navy Engineering Experiment Station at Annapolis, just across the Severn River from the Naval Academy. Ellyson, Rogers, Towers, and their enlisted mechanics began flight operations there in the fall of 1911. They combined training with experimental work. To avoid winter weather, they moved to San Diego in December and wrecked all three of their airplanes while flying from the Curtiss field. The following spring they returned to Annapolis. At a new site (the previous year the camp had been in the line of fire of the Naval Academy's rifle range), they began rebuilding their aircraft and prepared to train the new aviators who soon came to join them.

Among the prospective aviators who reported to the Annapolis camp in 1912 were two Marine officers. Their presence reflected a slowly growing Marine Corps interest in aviation. This interest was closely related to the emerging new mission of the Corps in the steel battleship Navy: occupation and defense of advance bases for the fleet. Since 1900, the Navy and Marine Corps had been trying to organize an Advance Base Force of Marine infantry and artillery. Shortages of funds and manpower and lack of agreement on details of its organization had hampered the actual formation of the force, but by the end of 1911 an Advance Base School was



Lieutenant Alfred A. Cunningham cranks up "Noisy Nan" for a test flight at Philadelphia in 1911. The plane's inventor is at the controls. (Marine Corps Photo 514941).

in operation at the Philadelphia Navy Yard. During 1912, the Marine Corps staff in Washington concluded that, in the words of Major General Commandant William P. Biddle, "great benefit to an advanced base force . . . might result from trained aviators."¹ Accordingly, the Marine Corps ordered two officers then assigned to the Advance Base School, First Lieutenants Alfred A. Cunningham and Bernard L. Smith, to Annapolis for flight instruction and aviation duty. With this routine order began the epic of Marine Corps aviation.

For Alfred A. Cunningham, the first of the two Marines to arrive at Annapolis, the assignment represented the fulfillment of a dream long pursued. Born in Atlanta, Georgia, in 1882, Cunningham enlisted in a volunteer infantry regiment during the Spanish-American War. He was mustered out of the Army after a tour of occupation duty in Cuba, returned to Atlanta, and spent the next 10 years selling real estate. During these years in Atlanta aviation caught his imagination, probably in 1903 when he made his first flight of any kind—a balloon ascent. In 1909, he resumed his military career by accepting appointment to the rank of second lieutenant in the Marine Corps. After two years of routine duty with battleship detachments and at various shore stations, he was promoted to first lieutenant in September 1911 and in November of that year he reported to the Marine Barracks at Philadelphia for duty and instruction at the Advance Base School.²

Cunningham had retained his interest in aero-

nautics, and at Philadelphia he found an active aviation movement among civilians and off-duty military personnel. Cunningham soon joined the unofficial experimenters. With his own money, he rented an airplane from its builder (who needed the \$25 per month to buy food) and persuaded the commanding officer of the Navy Yard to let him use an open field on the base for test flights. Even Cunningham's enthusiasm, however, could not overcome the aerodynamic deficiencies of "Noisy Nan," as he called his rented aircraft. The young, aspiring aviator described his days of frustration: "I called her everything in God's name to go up. I pleaded with her. I caressed her, I prayed to her, and I cursed that flighty old maid to lift up her skirts and hike, but she never would."^{3*}

Besides struggling with "Noisy Nan," Cunningham joined the Aero Club of Philadelphia, the city's principal organization of aviation enthusiasts, and he launched a campaign to interest the Marine Corps in establishing its own aviation force. Evidently making good use of his experience selling real estate, he sold the members of the Aero Club, many of whom were wealthy, influential Philadelphia socialites, on the idea that their city should have a Marine air

* "Noisy Nan" probably was underpowered for its weight and might well have proved highly unstable had Cunningham managed to get it into the air. It was an excellent preliminary trainer, however, giving Cunningham the "feel" of flying in its takeoff runs and occasional brief hops off the ground. (Gemeinhardt Comments)

base. The Aero Club members, through their political friends in Washington, D.C., brought pressure to bear on a number of officials, among them Major General Commandant Biddle, himself a member of a prominent Philadelphia family.⁴

What effect, if any, Cunningham's unmilitary methods of advocacy had on the decision to detail Marine officers for pilot training is a matter of conjecture; but his activities at least appear to have assured him first place on the list of potential aviators. On 16 May 1912, Cunningham received orders detaching him from the Marine Barracks at Philadelphia and instructing him to report on 22 May to the U.S. Naval Academy at Annapolis (which meant the nearby aviation camp) "for duty in connection with aviation."⁵

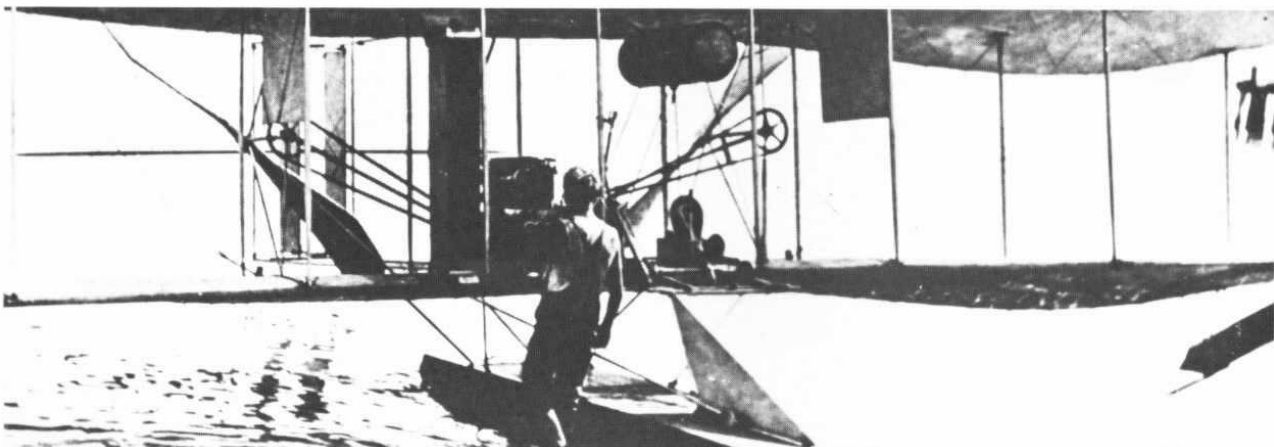
Cunningham reported at Annapolis on the specified date, only to be ordered away almost at once on expeditionary duty. When he returned in July, no aircraft were available for him to fly. Eager to begin flight training at once, he obtained orders to the Burgess Company and Curtiss factory at Marblehead, Massachusetts, which built the Navy's Wright aircraft and which had airplanes and civilian instructors.⁶ There, after two hours and 40 minutes of instruction, Cunningham soloed on 20 August 1912. He later explained the brevity of his training and described his solo flight:

There being so few civilian flyers, the factory had to pay them a huge salary to teach us, and they were anxious to make it short and snappy . . . I had only attempted to make two landings in rough weather when one calm day they decided to risk the plane rather than continue to pay any instructors large salaries. I was asked if I was willing to try it alone, and said I was. I took off safely and felt confident in

the air until I thought of landing and wondered what would happen when I tried to do it alone. Every time I decided to land I would think of some good excuse to make another circle of the bay. The gas tank was mounted between the wings in plain view, and a small stick attached to a float protruded from the top of it for a gasoline gage. As the gas was used, this stick gradually disappeared within the tank . . . As this stick got shorter and shorter, I became more and more perturbed at having to land with little idea of how to do it. Just as the end of the gasoline gage stick was disappearing, I got up my nerve and made a good landing, how I don't know . . . This was my first solo.⁷

Cunningham eventually was designated Naval Aviator No. 5 with the effective date of his designation arbitrarily set as 17 September 1915.* Both the date of his solo and the date thus fixed for his formal recognition as a naval flier have their advocates as "birthdays" of Marine Corps aviation, but the date he reported to the Aviation Camp at Annapolis, 22 May 1912, is the officially accepted birthday.

* Because the Navy was slow to establish official performance standards for aviation, precedence numbers and dates of designation of the first aviators, including Cunningham, are confusing and arbitrary. The Navy set its first official aviation performance standards in April 1913. Almost two years later, the Secretary of the Navy sent letters to fliers designating them as Navy Air Pilots and setting precedence dates. This list omitted the names of Ellyson, Rodgers, and Cunningham—Naval Aviators 1 and 2 and Marine Corps Aviator 1—because they were not on aviation duty at the time the letters were issued. In 1918, when golden wings were distributed as the aviators' official badges, this omission was rectified. All naval aviators received new precedence numbers including the earliest fliers, whose numbers were based on the order in which they reported for flight training. Cunningham thus became Naval Aviator Number 5, with his qualification date arbitrarily stated as 5 March 1913, and his date of designation as a naval aviator as 17 September 1915. (Pearson Comments: Caidin, *Golden Wings*, Appendix A).



Commonly called the "Bat Boat," the Wright B-1 seaplane was the third aircraft owned by the U.S. Navy and in 1912 was used to train Marine aviators. (Marine Corps Photo 514903).

On 18 September 1912, First Lieutenant Bernard L. ("Banney") Smith, the second Marine assigned to aviation training, arrived at Annapolis. Born in Richmond, Virginia, in 1886, Smith had entered the Marine Corps in the same year as Cunningham and was only a few days junior to Cunningham in rank based on the dates of their promotions to first lieutenant. By the time Smith reported for training, the Navy's three aircraft had been repaired. Towers, therefore, taught Smith to fly in one of the Curtiss machines, the A-2. Apt and enthusiastic, Smith soon soloed and flew frequently with Towers and Ellyson. When naval aviator designations were sorted out, he went on the list as Number 6.⁸

In September, Lieutenant Ellyson, now officer in charge, reorganized the aviation camp, assigning particular officers to each of the four aircraft. Cunningham received the B-1, the older of the two Wright machines, while Smith took charge of a Curtiss, the A-1. Naval officers flew the other two planes. Cunningham, with Sergeant James Maguire, the first enlisted Marine assigned to aviation duty, became known informally as the "Marine Camp," while Smith worked with Lieutenant Towers in what was called the "Curtiss Camp." *

Throughout early 1912 and 1913, the naval aviators continued to conduct training flights and tests of tactics and aircraft capabilities. They experimented during this period with detection of underwater objects from the air and with air-ground radio communication. In January 1913, the aviation camp for the first time joined the fleet in its annual maneuvers off Guantanamo, Cuba. The aviators here proved that they could locate submerged submarines and that they could spot enemy surface vessels without themselves being sighted. They dropped missiles from the air and took photographs. In an effort to increase interest in aviation, they carried over 150 Navy and Marine officers on indoctrination flights. One of these officers, who flew with Lieutenant Towers, was a future Commandant of the Marine Corps, Lieutenant Colonel John A. Lejeune. He spent 14 minutes aloft.⁹

Cunningham and Smith both participated in these activities, but Cunningham was hampered

by the inadequacies of his plane. The B-1, the first Wright Brothers aircraft purchased by the Navy, was powered by a single engine which drove twin propellers by long chains connected to sprocket wheels. It had been wrecked and rebuilt several times before Cunningham took it over, and Cunningham rebuilt it again. The performance of the aged machine steadily deteriorated, as Cunningham reported to Captain Chambers:

My machine, as I told you and Mr. Towers probably told you, is not in my opinion fit for use. I built it from parts of the Burgess F and Wright B, which are not exactly alike and nothing fitted. I had to cut off and patch up parts and bore additional holes in beams in order to make them fit. The engine bed, made by Burgess, was not exactly square with the front beam, so the engine had to be mounted a little out of true (with reference to the engine bed). I have made over 200 flights in this machine and recently, in spite of unusual care of myself and men, something seems to vibrate loose or off a majority of the flights made. One of the propeller shafts is the same one used with the Cyro motor in the old machine. It is the only left-hand shaft here. While the engine runs smoothly, it does not deliver nearly as much power as when it was newer, and even then, it did not have enough power to fly safely in any but smooth weather. It is impossible to climb over a few hundred feet with a passenger. The whole machine has just about served its usefulness and I would like very much to have a new machine of the single propeller type. Lt. Arnold, of the Army, after seeing the machine run and examining it, said that none of the Army fliers would go up in it. Will you kindly let me know what the prospects are for my getting a new machine.¹⁰ **

In spite of the B-1's faults, Cunningham managed to make almost 400 flights in it between October 1912 and July 1913. On a couple of occasions, his craft stayed airborne long enough to cover about 80 miles and it reached a maximum altitude of around 800 feet. The more frustrating days were typified by the terse entry on the page of Cunningham's flight log recording flights number 371 through 383: "Engine stopped in air on nearly all these flights."¹¹

In August 1913, Cunningham requested and received detachment from flight duty. He stated concisely his reason for requesting this transfer: "My fiance will not consent to marry me unless I

* This might be considered the beginning of a divergence in the careers of the first two Marine aviators, a divergence which steadily became more apparent. Cunningham from the start was not only an aviator but emphatically a *Marine* aviator, always promoting a distinctive Marine air entity. Smith, on the other hand, identified himself more generally with naval aviation and contributed much to its development.

**The "Lt Arnold" referred to was the future General Henry H. ("Hap") Arnold, commander of the U.S. Army Air Forces in World War II. One of the early Army aviation stations was located at College Park, Md., so that informal contact between the Army fliers and their Navy colleagues at nearby Annapolis was frequent. (Van Deurs, *Wings for the Fleet*, p. 51.)

give up flying."¹² * Assigned to ground duty at the Washington Navy Yard, Cunningham continued to advocate Marine aviation and soon would make some of his most valuable contributions to it.

After Cunningham's departure, Lieutenant Smith continued flying with the Navy aviators. He was joined in November by the third Marine to be assigned to aviation, Second Lieutenant William M. McIlvain. McIlvain soloed the following month and became Naval Aviator Number 12.

At the end of 1913, the Navy's air arm consisted of 8 aircraft with 13 qualified officer pilots. Of this number two (not counting the grounded Cunningham) were Marines, and seven more enlisted Marines were in training as mechanics. In October, the Major General Commandant recommended that the Marine aviation personnel "with the necessary equipment" be moved to the Philadelphia Navy Yard for duty with the advance base regiment then being assembled there.¹³ This recommendation soon would be followed by the first tactical deployment of Marine aviators with Marine ground forces.

Slow Steps Forward, 1913-1917

During 1913, while the pilots at Annapolis flew, repaired their planes, and flew again, a series of Congressional and Navy Department actions placed naval aviation, and Marine aviation as a part of it, on a more solid organizational foundation. In the Naval Appropriations Act for fiscal year 1914, passed on 4 March 1913, Congress authorized an increase in pay of 35 percent for officers actually flying heavier-than-air machines. The same legislation limited the total number of Navy and Marine aviators to 30 and provided that none could hold rank above that of lieutenant commander or major. In spite of these limitations, the act constituted the first formal recognition of the air service as a separate specialty for Navy and Marine personnel.

On 31 August, the General Board of the

Navy,** the service's planning agency, after a major study of U.S. and foreign aeronautics, called for the creation in the Navy of "an efficient . . . air service" directed in the Navy Department by an officer with full authority on questions of personnel and procurement and with at least captain's rank. The General Board urged the Navy Department to ask Congress for funds for bases, aircraft, and training schools.

In October, Secretary of the Navy Josephus Daniels appointed a board of officers headed by Captain Chambers to prepare detailed plans for the organization of a "Naval Aeronautic Service." Lieutenant Cunningham, temporarily detached from the Washington Navy Yard, represented the Marine Corps on the seven-man panel which included Navy aviators, sea officers, and representatives from the Bureaus of Navigation, Steam Engineering, and Ordnance. After 12 days of deliberations, the board issued a report calling for a force of 50 heavier-than-air craft to be attached to the fleet, with one plane on board each fighting vessel, and special auxiliary ships to carry fuel, spare parts, and extra aircraft. The board also advocated the establishment of a naval air training and experimental station at Pensacola, Florida. Following the General Board's lead, the Chambers Board urged creation of an Office of Naval Aeronautics under the Secretary of the Navy to unify the aviation-related functions then scattered among the bureaus.

Of special interest to Marine aviation were two points in the report. The Chambers Board recommended creation of a separate force of six aircraft "to establish an advanced base ashore," and it suggested that a Marine officer be a member of the staff of the proposed Director of Naval Aviation. Beyond this, the board did not address the organization of Marine Corps aviation or attempt to define its position within naval aviation.¹⁴

Efforts soon began to implement the Chambers Board's proposals. On 17 December 1913,

* There is a common belief that Navy regulations in this period prevented married men from flying, but no such policy apparently existed. Ellyson married in November 1912 but continued flying. Lieutenant John Rodgers actually flew the B-1 with Mrs. Rodgers as a passenger, and other married officers were ordered to aviation duty. Perhaps the future Mrs. Cunningham either flew in the B-1 like Mrs. Rodgers or simply saw the craft. (Pearson comments)

** The General Board was an advisory panel established in 1900 by Secretary of the Navy John D. Long to advise him on plans, policies, and procedures proposed by the bureau chiefs. There was at that time no Chief of Naval Operations, and the bureau chiefs reported directly to the Secretary of the Navy. Although the General Board had only advisory powers, the prestige of its members—who included Admiral of the Navy George Dewey, the President of the Naval War College, the Chief of the Bureau of Navigation, and the Chief of the Office of Naval Intelligence—gave the board considerable influence.



1st lieutenant Bernard L. (Banney) Smith, the second Marine to qualify as an aviator. (Marine Corps Photo 516375).

Captain Mark L. Bristol assumed the post of officer in charge of aviation, replacing Chambers, who retired from the service but remained in the Navy Department as an advisor on aeronautics. By November 1914, an Office of Aeronautics had come into existence within the Division of Operations, with Bristol as its director. Meanwhile, in January 1914, the naval aviation camp moved from Annapolis to an abandoned navy yard at Pensacola. There the aviators and ground crewmen began cleaning up the wreckage left by years of neglect and hurricanes and setting up the hangers and sea plane ramps of what would become the Pensacola Naval Air Station. Late in 1914, as though inspired by the general flurry of activity, Congress included in the annual naval appropriations act \$1,000,000 for aviation, to be spent under the direct supervision of the Secretary of the Navy rather than spread among the bureaus.

Early in this year of advance for naval aviation, Marine flyers for the first time briefly attained their own organization and operated with Marine ground units. On 3 January 1914, as the rest of the Annapolis camp prepared to move to Pensacola, a "Marine Section of the Naval Flying School," consisting of Lieutenants Smith and McIlvain with 10 enlisted mechanics, and equipped with a flying boat and an amphibian drawn from the aircraft at Annapolis, embarked at Philadelphia on the transport USS *Hancock*. They sailed for Culebra, Puerto Rico, to join the newly created Advance Base Brigade in the annual Atlantic Fleet exercises.

In the development of the Marine Corps, the Culebra exercise of January-February 1914 had a crucial place. It provided the first test of the Marines' ability to occupy and fortify an advance base and hold it against hostile attack. Landing men, equipment, and heavy guns on Culebra Island, the Marines of the Advance Base Brigade quickly set up their defenses. They withstood simulated bombardments by the fleet and repelled a night amphibious assault. At the end of the exercise, the umpires declared the Marine defenders victorious.

The Aviation Section operated with the brigade throughout the exercise. The aviators set up a temporary seaplane base on Culebra on land blasted clear of trees and mangrove roots. Using their C-3 flying boat because the Owl amphibian* proved too light to carry two men,

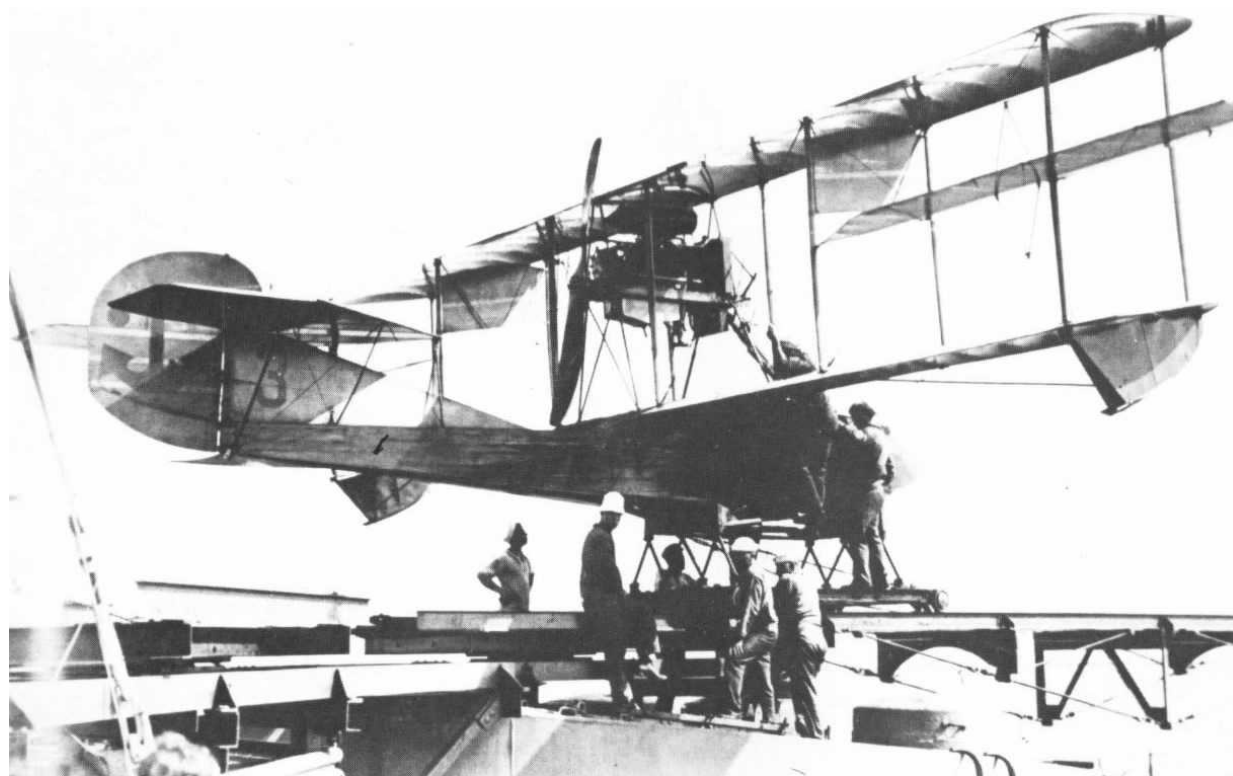
* The C-3 was a Curtiss "F" Boat. Like other naval aircraft of the time, it was a "pusher," with the propeller mounted on the rear end of the engine and with the pilot

Smith and McIlvain flew scouting and reconnaissance missions. On 22 January, during the fleet's bombardment of Culebra, the Marine flying boat twice circled over the battleships at 5,000 feet altitude, "entirely out of range of small arm fire and (the) high angle of fire making ships' guns ineffective." Lieutenant Smith declared that this feat "shows the possibility of aeroplanes for defense using bombs of high explosive." Almost every day, the aviators took officers of the Advance Base Brigade on flights over Culebra and its defenses "to show the ease and speed of aerial reconnaissance and range of vision open to the eyes of the aerial scout." The Aviation Section left for the United States on the *Hancock* on 5 February. By that time, Smith and McIlvain had made a total of 52 flights, during which they had spent 19 hours and 48 minutes actually in the air.

and passenger sitting side by side in the open air in front of the wings. Both occupants had to lean in the desired direction when they wished to bank and turn the aircraft. The E-1 was an early amphibian, its Owl designation meaning "Over Water or Land." (Gemeinhardt Comments).

In March 1914, on the basis of his Culebra experience, Lieutenant Smith recommended that the Marine air unit for advance base work be composed of five aviators and about 20 enlisted mechanics and ground crewmen. It should be equipped with two flying boats, an amphibian, and a fast single- or two-seater land plane. Smith stressed the need to equip the flying boats, intended primarily for scouting and reconnaissance, with radios, and he urged that canvas shelters for the aircraft and other easily movable ground equipment be provided. Finally, he suggested that the Marine troop transport then under construction be equipped to carry and launch at least one aircraft.¹⁵

Smith's recommendations dimly foreshadowed later elements of the Marine air-ground team, but immediate reality fell far short even of his modest vision. The Marine air unit ceased to exist at the end of the Culebra exercise and merged once again into the main body of naval aviation at Pensacola. Aircraft and pilots from Pensacola, including "Banney" Smith, participated in the operations at Tampico and Vera Cruz during the Mexican intervention of April



A Curtiss C-3 in launch position on the catapault of the USS North Carolina. The aircraft was assigned to the Marines for maneuvers off Pensacola, Fla., in July 1916. (National Archives Photo 80-G-426924).

1914, but no separate Marine air unit was created. Smith, stationed with the fleet at Tampico, had no chance to fly in support of the Marine brigade at Vera Cruz.¹⁶

The outbreak of World War I in the summer of 1914 had little impact on the small band of Marine aviators beyond the temporary detachment from them of "Banney" Smith. The Secretary of the Navy sent Smith to the U.S. Embassy in Paris, where he spent the next two years following and reporting on the explosively rapid wartime development of European aviation. During this assignment, Smith visited and occasionally flew in combat with French air units, and he made a secret trip to Switzerland to obtain aviation intelligence.¹⁷

During 1915 and 1916, while the war stimulated the growth of European aviation, the advance of American naval aviation faltered. Changes in Navy Department organization in Washington during these years all but abolished the post of Director of Aviation, leaving the air program without a central coordinator or authoritative spokesman. High-ranking officers in the bureaus continued to doubt the military value of aviation and hence failed to press aggressively for its development. At times, they refused to spend money appropriated for aircraft supplies and delayed or prevented the carrying out of legislation.

The continued practical limitations of the available aircraft did much to justify this official skepticism and foot-dragging. The aviators envisioned and promised great things, but their aircraft continually let them down when tested. Cunningham's troubles with his B-1 were all too typical of aircraft performance in this period. Even at their best, early naval airplanes, such as The Owl which the Marines took to Culebra in 1914, and which they did not use because the wings were deemed too weak to carry two men, had top speeds of no more than 50 miles per hour. Small fuel capacity and mechanical unreliability limited their range and endurance. The aviators' vision simply had outrun their technology, and until technology caught up, the opponents of aviation would hold strong ground.

In spite of administrative and technological frustrations, naval aviation achieved significant advances. The air station at Pensacola slowly acquired more men, aircraft, and equipment, and with these expanded its training and testing activities. Navy and Marine pilots practiced anti-submarine patrolling, bombing, and artillery spotting. Late in 1915, they began launching planes from an experimental catapult built on



A Curtiss C-3 being recovered by the USS North Carolina during maneuvers off Pensacola, Fla., in July 1916. (National Archives Photo 80-G-426917).

the Pensacola station ship, the cruiser USS *North Carolina*. In 1916, catapult experiments continued, and a few aircraft began operating on board warships of the fleet.

On 9 January 1915, the Marine contingent at Pensacola, now down to one flyer, McIlvain, was designated the "Marine Section, Navy Flying School." The section soon acquired two more pilots. Cunningham, who evidently had persuaded his wife to let him resume flying, reported to Pensacola in April for refresher training and flight duty. Early in the summer, the fourth Marine aviator, First Lieutenant Francis T. ("Cocky") Evans arrived and started flight training. The force of Marine enlisted mechanics also slowly increased, and at a still undetermined point in this period the Marines' first warrant officer aviator, Walter E. McCaughtry, learned to fly.*

In August 1915, as the result of an agreement

* McCaughtry was attached to naval aviation as early as June 1913 when a corporal. Apparently he learned to fly at some time during his tour of duty as an enlisted man. In June 1917 he was promoted to the temporary rank of captain and as an officer officially qualified as a naval aviator. He received permanent captain's rank in June 1920. (Pearson Comments)

between Secretary of the Navy Daniels and the Army Signal Corps, Navy and Marine pilots began training in land planes at the Signal Corps Aviation School in San Diego. Daniels had made this arrangement in the belief that defense of advance bases and, in the case of the Marines, possible joint operations with the Army, required an aviation force able to operate from either land or water. Lieutenant McIlvain was one of the first two naval aviators sent to the Army flight school. Cunningham followed him there in 1916. During this training he flew for the first time in a cockpit inside a fuselage instead of from a seat in the open in front of the wings of a primitive pusher. He wrote later that he would "never forget the feeling of security I felt to have a fuselage around me."¹⁸ This training pattern persisted throughout the early period of Marine aviation. Marine pilots received basic flight instruction from the Navy and were designated naval aviators. Then they took land plane training at Army schools and advanced training with the Army and at their own airfields when they finally acquired them.

Besides learning to fly land planes, the Marine aviators participated in the aeronautic experiments at Pensacola, sometimes with near disastrous consequences for themselves. On 8 November 1916, for example, Cunningham attempted a takeoff from the catapult mounted on the *North Carolina*. His AB-2 seaplane overturned in the air, plunged into the water, and was wrecked but was towed to the ship and hoisted on board. Cunningham, although he seemed unhurt at the time, received a back injury which gave him months of pain.¹⁹

During 1916, with the European war continuing on its ever more destructive way, and the United States on the brink of war with Mexico and approaching a final confrontation with the Germans over U-boat depredations, the administration of President Woodrow Wilson began large-scale expansion of the Army and Navy. All branches of both services benefited, including Navy and Marine aviation. Urged on by the General Board, the Navy Department asked Congress for men, money, and aircraft. Plans took shape for a naval air arm of over 500 planes, and a series of interservice boards tried to define the respective roles and missions of Army and Navy aviation and began selecting sites for coastal airbases.

Congress, in the Naval Appropriations Act of 29 August 1916, provided \$3,500,000 for aircraft and equipment. It also authorized the establishment of a permanent Naval Flying Corps of 150

officers and 350 enlisted men of the Navy and Marine Corps. Officers for this force could be appointed from warrant officers, enlisted men, or civilians, and were to be considered an addition to the legally authorized officer strength of the service. The act also authorized creation of a Naval Reserve, including a flying corps, recruited from former regular personnel or civilians, and it provided for a Marine Corps Reserve organized in the same branches as the Naval Reserve, thus by implication creating a Marine Corps Aviation Reserve. Opposition from the bureaus prevented creation of the Naval Flying Corps, but the reserve would grow rapidly after the American entry into World War I and would furnish most of the Navy and Marine pilots for the conflict.

While disagreements within the Navy Department blocked implementation of most of the personnel provisions of the act of August 1916, they did not prevent a rapid increase in and modernization of naval aviation's aircraft inventory. By the end of 1916, 60 new airplanes had been ordered, including 30 Curtiss N-9 seaplanes. In these machines, adapted from the JN, or "Jenny," trainer being built for the Army, naval aviators received their first "tractor" aircraft in which pilot and observer sat in cockpits in the fuselage with the engine and propeller in front of them. By the end of 1916, 25 of these airplanes, which were much safer* and more maneuverable than the old pushers, were in operation at Pensacola.

Early in 1917, while flying one of the new N-9s, "Cocky" Evans made a major contribution to American aviation safety. He did it largely by accident. He and other pilots at Pensacola had been arguing about whether one could loop a tractor-type seaplane. Evans and others insisted they could, while their opponents contended the heavy, fragile pontoons would make the maneuver impossible. On 13 February, at an altitude of about 3,500 feet above Pensacola on a routine flight, Evans decided to try to loop. His initial attempt failed, and his N-9 stalled and went into a spin. No American aviator up to this time had

* While the tractor-type biplanes were safer, their open cockpits, placed one behind the other, had their hazards for the man in the rear. This was particularly true if his pilot in the front seat enjoyed chewing tobacco, as many an early Marine aviator did. As an authority on Marine aviation puts it, a rear-cockpit gunner or observer with a tobacco-chewing pilot "had but a brief second to see the pilot's head start to swivel; then duck! The disposal of 'chaw' flew past at air speed in a fairly wet and scattered dispersion." (Gemeinhardt Comments)

worked out a method for recovering from a spin, and several had died in crashes as a result of this gap in their knowledge. Evans, apparently without realizing he was in a spin, instinctively pushed his control wheel forward to gain speed and controlled the turning motion with his rudder. Recovering from the spin, he kept trying to loop, stalling, spinning, and recovering until finally he managed to loop. To make sure he had witnesses for his feat, he flew over the seaplane hangars and repeated the whole performance. Not until then did he realize that besides proving a seaplane could loop he had solved a major safety problem. The aviators at Pensacola at once incorporated his spin-recovery technique in their training, and Evans was sent on a tour of military airfields to teach other pilots his method. Years later, on 10 June 1936, Evans received the Distinguished Flying Cross for this life-saving discovery.²⁰

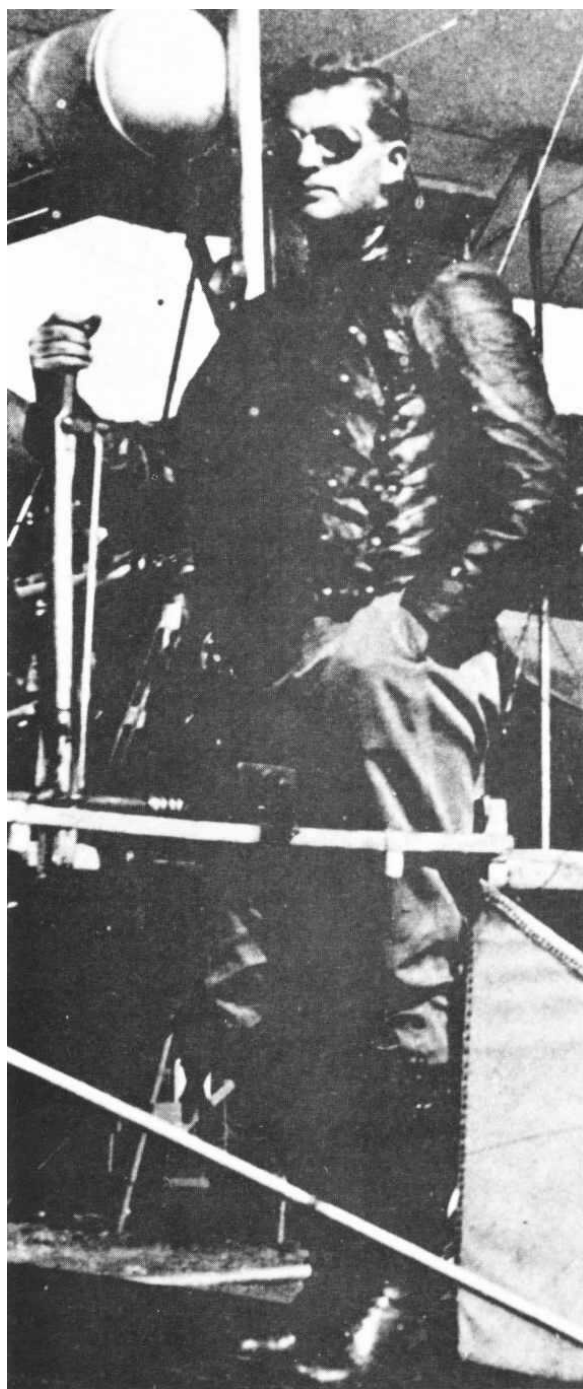
Marine Aviation Begins to Organize, 1917

At the end of 1916, out of a total of 59 commissioned officers and 431 enlisted men assigned to naval aviation, five of the officers and 18 of the enlisted men were Marines.²¹ Marine aviation possessed no organization of its own beyond the amorphous "Marine Section" of the Naval Flying School, and it had no director or official spokesman at Headquarters. Its history up to this time had consisted largely of a series of individual exploits and disconnected episodes within the stream of naval aviation development.

Nevertheless, from the sending of Cunningham and Smith to Annapolis in 1912, the Marine Corps clearly had intended to build a distinct unit of its own attached to the Advance Base Force. By the end of 1916, the time for creation of such a unit seemed to be approaching. The Major General Commandant announced in his annual report for that year that a "Marine Corps Aviation Company" of 10 officers and 40 men would be organized "for duty with the Advance Base Force" at "as early a date as practicable." It would be equipped with both land- and seaplanes.²²

The practicable date soon came. On 26 February 1917, Lieutenant Cunningham, soon to be promoted to captain, received orders to begin

organizing at the Philadelphia Navy Yard an Aviation Company for the Advance Base Force.²³ Less than two months later, the United States declared war on the German Empire.



Lieutenant Alfred A. Cunningham standing in front of a Curtiss Pusher. (Photo from the Cunningham Papers).

CHAPTER II

MARINE AVIATION IN WORLD WAR I, 1917-1918

Marine Aviation Mobilizes

With the declaration of war against Germany, the Navy and Marine Corps entered a period of rapid expansion during which the air arms of both services grew in manpower and equipment and during which Marine aviation developed its own units and bases. After consultations with the Allies, the Navy Department adopted anti-submarine warfare as naval aviation's principal mission and began large-scale preparations for it. The office of Director of Naval Aviation quickly revived under the leadership of Captain Noble E. Irwin and veteran aviator Lieutenant Commander John Towers. With support from the Secretary of the Navy, Irwin and Towers effectively coordinated aviation activities in the Navy Department. Towers took charge of enrolling thousands of new officers and men in the Naval Aviation Reserve, and he set up training facilities for them at Army and Navy bases and universities to relieve swamped Pensacola. By the end of the war the manpower strength of naval aviation had reached over 6,700 officers and 30,000 enlisted men. In October 1917, the Navy Department adopted the "Seventeen Hundred Program" for building over 1,700 seaplanes of three different types, and to speed aircraft development and procurement it established the Naval Aircraft Factory at Philadelphia.

The Marine Corps, which entered the war with 511 officers and 13,214 enlisted men, began an expansion which would bring its strength to over 2,400 officers and 70,000 men on 11 November 1918. Under the energetic direction of Major General Commandant George Barnett, the Marines prepared to send a brigade to France to fight alongside the Army.

Marine aviation started an aggressive campaign to secure first its share of the manpower of the expanding Corps and then a chance to go to France and fight. In this campaign, Cunningham, commander-designate of the Aviation

Company, emerged as the principal leader and driving force. Although without a formally recognized office or title, he became *de facto* director of aviation for the Marine Corps. In 1917, he represented both Marine and naval aviation on the interservice board which selected sites for coastal air stations. He recruited men for Marine air units, sought missions for them to perform, and negotiated with the Navy, the Army, and eventually with the British for equipment and facilities. Looking back on this hectic time, Marine Major General Ford O. ("Tex") Rogers, whose own distinguished aviation career began in World War I, justifiably declared: "Cunningham was the father of [Marine] aviation, . . . absolutely, completely. Without him, there never would have been any aviation."¹ *

Marine aviation soon found itself split between two separate missions. The Aviation Company at Philadelphia, renamed the Marine Aeronautic Company and enlarged with men from the Aviation Section at Pensacola, from other Marine units, and from the recruit depots, was designated to fly seaplanes on anti-submarine patrols. During summer 1917, Major General Commandant Barnett secured Navy Department approval for the formation of a second Marine air unit of landplanes to provide reconnaissance and artillery spotting for the brigade being sent

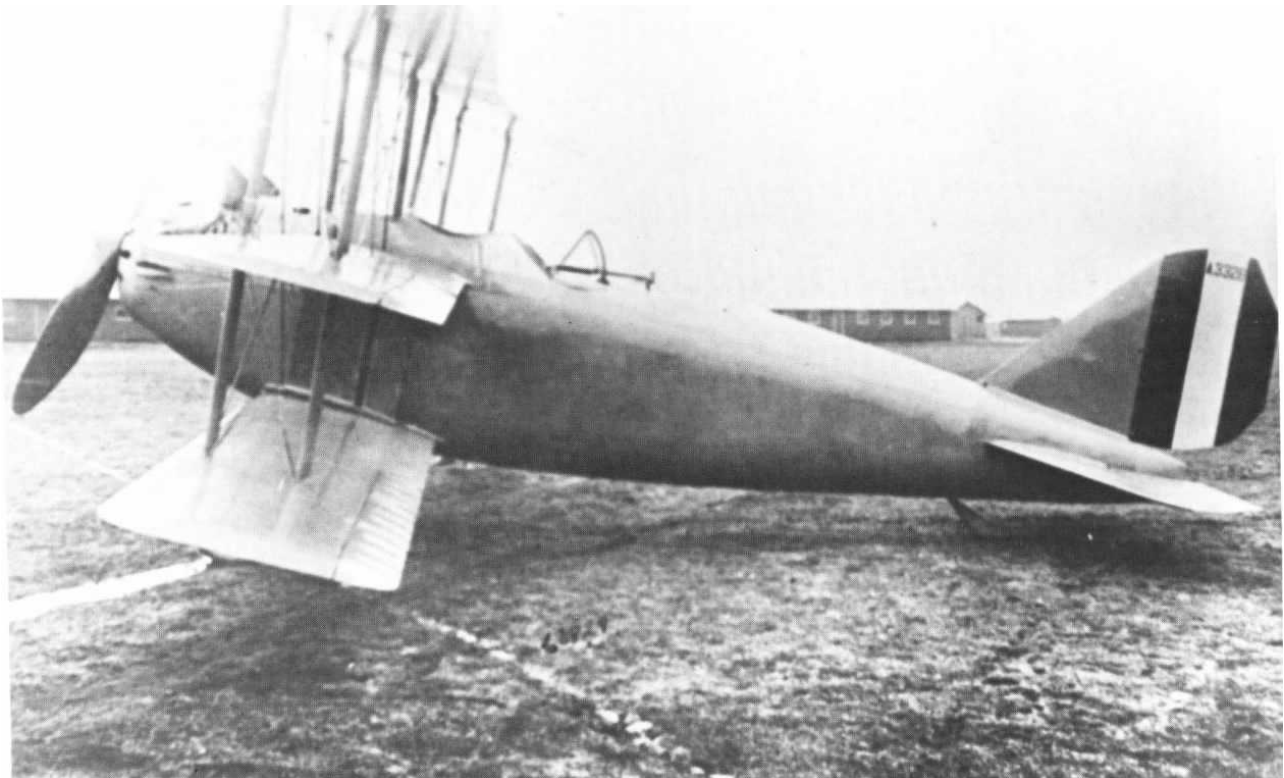
* "Banney" Smith also distinguished himself in aviation at this time, but, following the pattern early established, he worked in naval aviation in general rather than Marine aviation. Ordered home from France in 1917, he directed much of the design and procurement of naval aircraft and then organized the aerial gunnery and bombing school at Miami. In 1918, he returned to Europe to organize the Intelligence and Planning Section for Naval Aviation at Navy Headquarters in Paris. After the war he had charge of assembling material and equipment for the famous transatlantic flight of the Navy NC-4s. Resigning his regular Marine commission in 1920, Smith entered the Marine Corps Reserve in 1937 and saw non-flying active service in World War II. He died in an automobile accident in 1946. (Biography Files, Reference Section, History and Museums Division).

to France. This unit, its organization patterned after that of Army aviation squadrons but with fewer men and machines, would consist of 11 officers and 178 men with six fighter planes, six reconnaissance aircraft, and four kite balloons for the artillery observers. Under an arrangement negotiated by Cunningham at Barnett's instructions, the Army Signal Corps would train pilots and crewmen for this unit and provide most of its aircraft and equipment.²

Marine aviation began a vigorous search for men for the projected units. As candidates for commissions flooded into the first wartime Marine officers' school at Quantico during the summer of 1917, Cunningham met them and preached the cause of aviation. Karl Day, a member of that first class who later rose to the rank of lieutenant general, recalled: "Major Rixey assembled the battalion and said Captain Cunningham at Headquarters had a message for us, and introduced Captain Cunningham. . . . He told us that we were going to have an aviation section, that we would go to France, and that he was down there to talk to anybody

who was interested in becoming a pilot."³ Cunningham found plenty of volunteers. The officer candidates, many of them college athletes, responded to the challenge and glamor of aviation; as one of them put it, "It was a daring thing to do." Others, including Lawson H. M. Sanderson, who would become the Marine dive bombing pioneer, had other motives: "Well, hell, I thought I can ride better than I can walk. So I volunteered for aviation. . . . I'd only seen about two airplanes in my life, but I'd rather ride than walk."⁴

Out of dozens of volunteers from the first class at Quantico, Cunningham selected 18. Six of them eventually went into the Aeronautic Company for seaplane duty and the others joined the new landplane squadron. During the rest of the year, additional officers gradually expanded the ranks of Marine aviation. Few of these were regulars. Most were second lieutenants newly commissioned from civilian life and nominally members of the Marine Corps Reserve Flying Corps which had been authorized in the Naval Appropriation Act of 29 August 1916. The



The Kirkham tri-plane was typical of the many experimental models tried out by the Marines during aviation's early years. The Kirkham was made by Curtiss. (Marine Corps Photo 91590).



A JN-4B "Jenny." In 1917, Marines of the 1st Aviation Squadron trained in aircraft like this one (circa 1917). (Nat Archives RG 127-G Photo 517543).

Reserve, however, hardly had begun to organize when the war swamped it with new manpower, and in 1917, among the Marine aviators, "Nobody gave a damn and few, if any, knew who were regulars, temporaries, duration reserves, or what have you."⁵

By 14 October 1917, the Aeronautic Company had reached a strength of 34 officers and 330 enlisted men and had begun flight training, using two Curtiss R-6 seaplanes and a Farman land-plane. On that date, the company was divided to form the two projected aviation units. The 1st Aeronautic Company (10 officers and 93 men) would prepare for seaplane missions while the 1st Aviation Squadron (24 officers and 237 men) would organize to support the Marine brigade being sent to France.

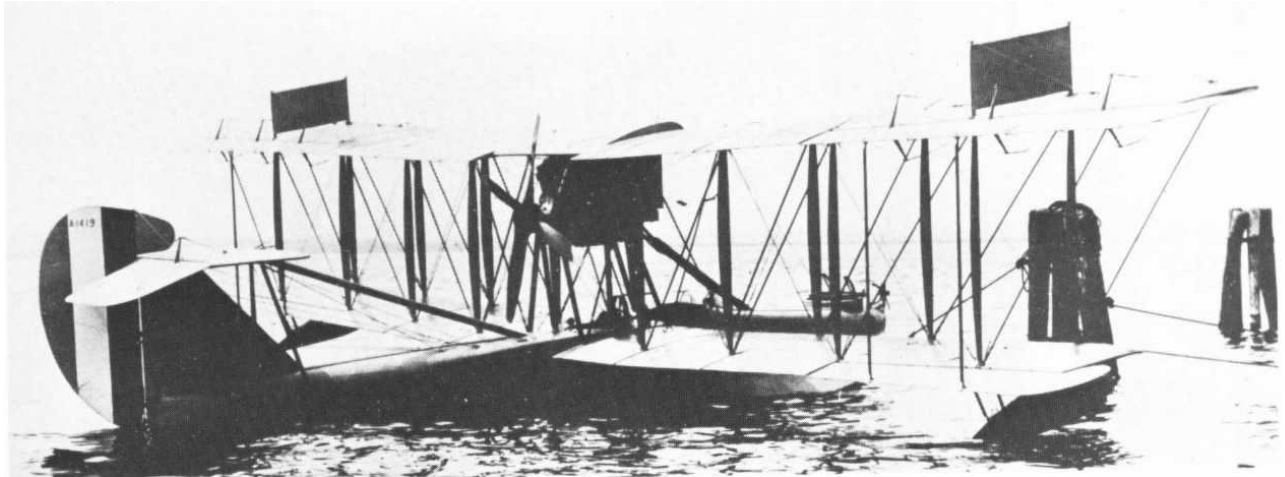
The 1st Aeronautic Company in the Azores

Of the two Marine air units, the 1st Aeronautic Company led the way into active service. In October, the company, commanded by "Cocky" Evans, now a captain, moved with its Curtiss R-6s to the Naval Air Station at Cape May, New Jersey, where it conducted seaplane training and coastal patrols. On 9 January 1918, enlarged to 12 officers and 133 enlisted men, the company embarked from Philadelphia for the Azores to begin anti-submarine operations.

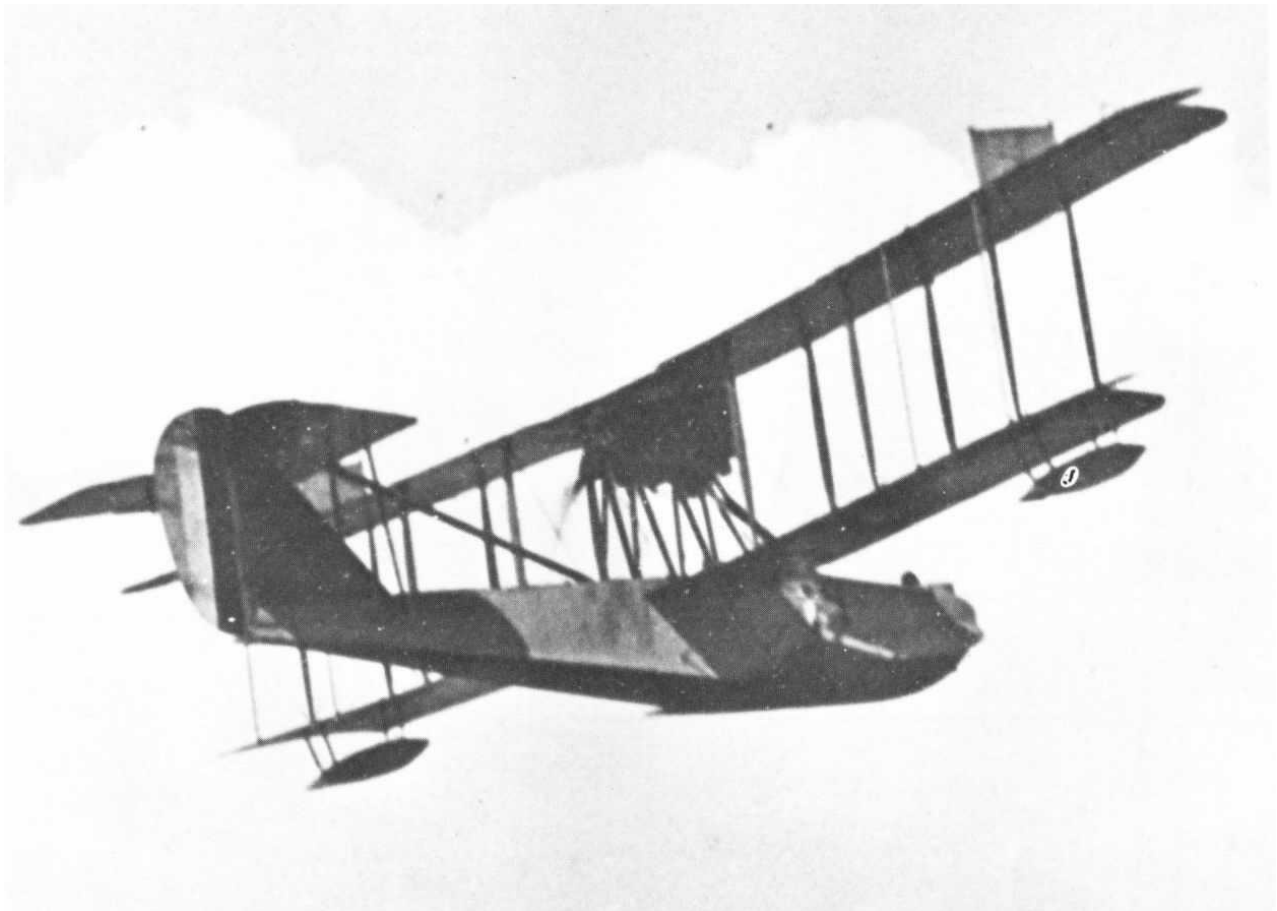
For its anti-submarine mission, the company initially was equipped with 10 Curtiss R-6s and

two N-9s. These were both single-engine, float-equipped, two-seater biplanes. The N-9 was the seaplane trainer with which the Marines had become familiar at Pensacola with a rear cockpit gun added and a more powerful Hispano-Suiza engine. The R-6, slightly larger than the N-9, had been purchased in great numbers by the Navy under the "Seventeen Hundred" Program. The company later received six Curtiss HS-2L flying boats. Each of these patrol planes carried a crew of two and with its single 330-horsepower Liberty engine could achieve a top speed of about 90 miles per hour. With a cruising range of about 400 miles, the HS-2L represented a marked improvement over the R-6 and the N-9, and it greatly enhanced the company's ability to carry out its mission.⁶

Throughout 1918, the Aeronautic Company maintained its vigil from its base at Ponta Delgada on the island of San Miguel. The assignment had its pleasant aspects. "There was wonderful flying weather, people were very friendly . . . They took us right into their homes and did everything they could for us, so it was good to be there." Operating within a 70-mile radius of the islands, the company, the first American aviation unit of the war to deploy with a specific mission, flew regular patrols to deny enemy submarines ready access to the convoy routes and deprive them of a safe haven in the Azores. An enlisted gunner and ground crewman of the force summed up the results: "We saw a few out there; in fact we dropped a few bombs, but as far as we know we didn't damage anything . . . But we kept them submerged, I think."⁷



An HS-2L flying boat of the type Marines used in the Azores during 1918. (Nat Archives RG 127-G Photo 517536).



HS-2L in flight in 1918. These aircraft greatly increased the anti-submarine effectiveness of the 1st Aeronautic Company. (Nat Archives RG 127-G Photo 517529).

Beginnings of the 1st Marine Aviation Force

The Marine landplane unit, the 1st Aviation Squadron under Captain "Mac" McIlvain, followed a more tortuous road to war. Under an agreement reached on 10 October between Captain Cunningham and Colonel Henry H. Arnold of the Army Signal Corps, the squadron was to receive basic flight training at the Army Aviation School at Hazlehurst (later Roosevelt) Field at Mineola, Long Island. Then it would move to the Army school of advanced flying at Houston, Texas. After this training was completed, "The Squadron will . . . be ready for service in France and the Army will completely equip it with the same technical equipment furnished their squadrons."⁸

Initially, the squadron's development went according to plan. On 17 October, the unit moved from Philadelphia to Mineola to begin training, and early in November the six officers of its balloon contingent were ordered to Fort Omaha, Nebraska, for instruction as aerial observers. The main body of the squadron at Mineola lived in tents near the runways and flew JN-4B "Jenny" trainers with civilian instructors, some of whom proved less than satisfactory. One of them, a Marine remembered, "was scared to death. He wouldn't let anybody touch the controls. I had four or five rides with him, and he never once let me touch the throttle, the wheel, or touch the rudder. So we raised hell about him, and he got fired."⁹

While McIlvain's squadron trained at Mineola, a third Marine aviation unit began forming at Philadelphia. This was the Aeronautic Detachment, organized on 15 December under Captain Roy S. Geiger, Marine Aviator Number 5, who had qualified early in 1917, with four officers and 36 enlisted men, most of them drawn from the 1st Aviation Squadron. This unit's mission remained uncertain at the time of its formation, but it apparently was intended for work with the Advanced Base Force.¹⁰

While the Marine land-based aviation force began organizing and training, Captain Cunningham sought a firmly defined mission for it. During November and December of 1917, he toured the Allied aviation facilities in France, visiting French and British air bases and flight schools and flying with the Allies on missions over the German lines.¹¹

During his trip, Cunningham strove to persuade the Army to attach the Marine landplane squadron to the Marine brigade in France as

originally had been intended. However, in Cunningham's words, the Army aviation authorities "stated candidly that if the [Marine] squadron ever got to France it would be used to furnish personnel to run one of their training fields, but that this was as near the front as it would ever get."¹²

With the intended mission of his force thus wiped out, Cunningham turned to enlarging the Navy's air role in France. Navy planners initially had envisioned conducting only anti-submarine patrols with seaplanes. Cunningham, however, in conferences with U.S. Navy officers at Dunkirk and with officers of the British destroyer patrol, discovered a need for bombers to attack the German submarines which operated from bases at Zeebrugge, Bruges, and Ostend on the Belgian coast. Such attacks could help to stem the submarine onslaught that early in 1918 still threatened to cut Britain's oceanic supply lines. Cunningham prepared a plan for a land-based force of Marine and Navy planes to take over this mission, which the British lacked the aircraft and pilots to perform. On 5 February 1918, with strong support from U.S. Navy officers in Europe and from the Allied authorities, he presented his plan to the General Board of the Navy. The board approved the plan and ordered the formation of a Northern Bombing Group to carry it out. On 11 March, Cunningham received orders to organize and take command of a 1st Marine Aviation Force which would be formed by combining Geiger's and McIlvain's detachments at Miami. This force would constitute the Marine element of the new bombardment group.¹³

After the initial decision to form it, the Northern Bombing Group went through several changes of mission and equipment. These changes resulted from debates between the Navy Department, Rear Admiral William S. Sims in London, the War Department, and the Allies. From bombing U-boats in the shallow coastal waters, the group's mission changed to bombing the German submarine pens in the Belgian ports. From flying fighters to escort the bombers, the Marine squadrons' role changed to conducting daylight bombing raids, using the British-designed DH-4. The Navy wing of the force, flying large Italian-built Caproni bombers, would carry out night raids.¹⁴

While Cunningham was seeking a mission for his Marine aviation force, the units from which it was to be created had been undergoing adventures of their own. McIlvain's 1st Aviation Squadron remained at Mineola until 1 January



Two Curtiss R-6s (foreground) and an N-9 of the 1st Aeronautic Company at Punta Delgada, Azores, 1918. (Nat Archives RG 127-G Photo 529925).

1918, by which date temperatures had reached 16 degrees below zero, rendering flight training almost impossible, and creating a threat to the health of the Marines, who still were living in tents. When the squadron medical officer declared a change of camp necessary for reasons of health, Captain McIlvain loaded his men, equipment, and aircraft on a train and headed southward.

The aviators left Mineola with little advance planning and, according to some accounts, without orders specifying their new station.* The squadron soon received instructions to report to

the Army's Gerstner Field at Lake Charles, Louisiana, but when the Marines arrived there the base commander refused to take them in because he had no authorization to do so from the War Department. For a day or so, the Marine aviators lived on board their train and ate in a borrowed Army mess hall. Then the necessary orders arrived, and the base commander allotted the Marines quarters and incorporated them into the landplane training program. Even then, the Marines had to uncrate, assemble, and test fly their own trainers before they could take to the air. Gradually the confusion sorted itself out and the Marines settled down to work, flying stick-controlled JN-4D trainers instead of the wheel-controlled JN-4Bs they had used at Mineola. They also practiced with the rotary-engine S4-C Thomas-Morse Scout.**

* An order exists, dated 31 December 1917, directing the squadron to move to its eventual new station, Lake Charles, Louisiana; but participants recall leaving Mineola without orders and stopping in Washington, D.C., on the way south while officers went into town to HQMC to ask what they should do next and received only suggestions they keep heading southward. At some time during the trip the squadron did receive orders to Lake Charles, but possibly the surviving copies were back-dated.¹⁵

** In a rotary engine, the engine rotated around the crankshaft, rather than the engine standing still and the crankshaft rotating as in the more common radial engine.

Captain Geiger's Aeronautical Detachment, the second component of the planned Marine bombing force, also moved early in 1918. On 4 February, Geiger received orders to take his detachment, which now consisted of 11 officers and 41 men, to the Naval Air Station at Miami, Florida. The unit left Philadelphia three days later.¹⁶ Soon after arriving in Miami, Geiger, now seeking a base for the entire 1st Aviation Force, moved his command from the main Navy field at Coconut Grove near Miami to a small, sandy airstrip on the edge of the Everglades, which was owned at the time by the Curtiss Flying School.

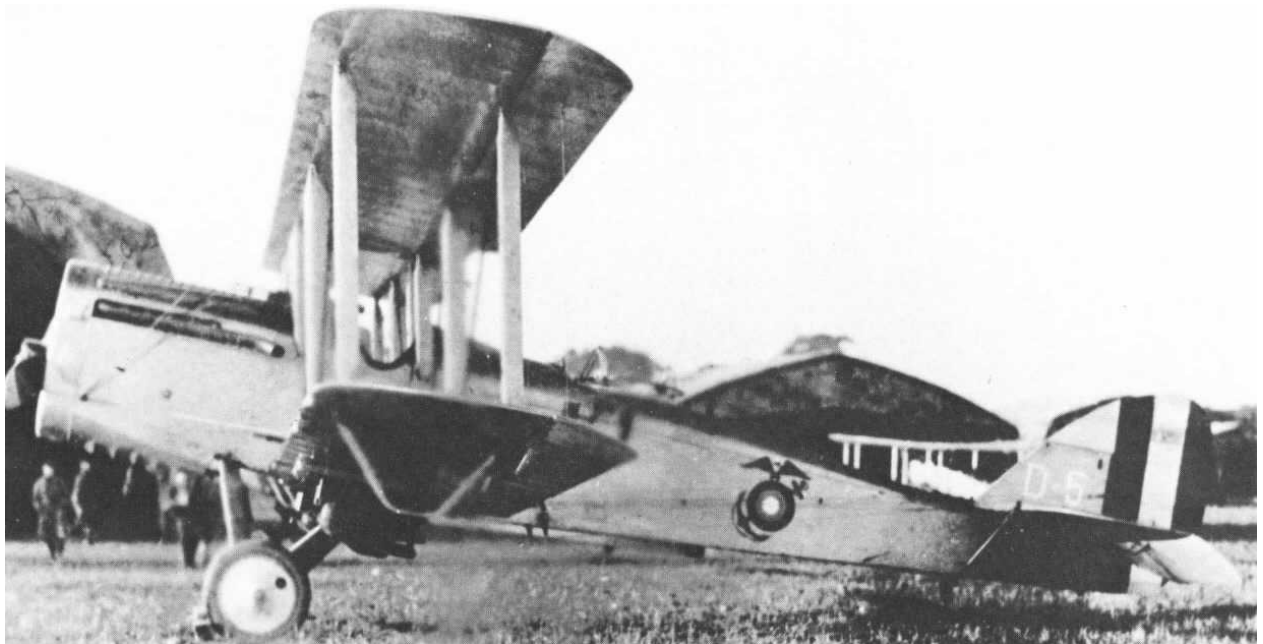
To secure Marine training facilities independent of the Army, Geiger absorbed the entire Curtiss Flying School into the Marine Corps, arranging to commission the instructors in the Reserves and to requisition the school's Jennies. Cunningham cleared the way for this unorthodox action and also obtained for Geiger 20 Jenny land planes for use as trainers. On 1 April, McIlvain's squadron arrived at the Miami field from Lake Charles, at last consolidating at one location the nucleus of the 1st Aviation Force.

Cunningham, still serving as *de facto* Director of Marine Aviation as well as commanding the 1st Aviation Force, launched a campaign of improvisation to bring his squadrons to full strength in men and machines. He again visited the officers' school at Quantico and obtained six more volunteers whom he sent to Miami. He collected other volunteers elsewhere, men whom one Marine pilot referred to as "strays that Cunningham . . . picked up. I don't know where he got them."¹⁷ Geiger recruited some of the civilian students at the Curtiss Flying School, promising them commissions if they satisfactorily completed pilot training. During March and April, 18 newly commissioned Marine lieutenants arrived in camp. Enlisted ground crewmen also appeared, some of them skilled mechanics, electricians, carpenters, and blacksmiths, others "just good Marines who had little more than basic military training."¹⁸

Even with this re-enforcement, Geiger's and McIlvain's detachments combined could not furnish enough pilots for the planned four squadrons. Realizing this, Cunningham toured the Navy air installations at Pensacola and Key



While the Standard E-1 was basically an Army aircraft, several were flown by Marines while training at Army airfields in 1917-1918. At the controls is "Curley" Newman while "Red" Weiler looks on. (Photo from the Goodyear Kirkham collection).



DH-4B of the 1st Aviation Force with the force's insignia of a Marine Corps Globe and Anchor superimposed on the Allied rondel. All DH-4Bs of the force had identification numbers with a "D" prefix. (Photo from Alfred A. Cunningham Papers.)



Around 1918 tents were used as hangars for Marine aircraft based at the Marine Flying Field near Miami, Fla. The planes are JN-4s. (Photo from the Goodyear Kirkham collection).

West and recruited naval aviators, most of them young reservists who wanted to go to France. These officers, already qualified Navy seaplane pilots, disenrolled from the Navy, enrolled in the Marine Corps, and reported to the Marine field at Miami for landplane training. Of 135 aviators who eventually flew in France with the Marine bombing force, 78 were transferred Navy officers.¹⁹

The Marines at Miami adopted an intensive training schedule, sandwiching into a few weeks basic flight instruction in seaplanes (necessary to qualify everyone for Navy wings), elementary landplane training, formation flying, aerobatics, and the rudiments of aerial tactics, gunnery, bombing, and reconnaissance. Some of the enlisted men were detailed and trained as air gunners and observers. Others took instruction, usually on the job, as mechanics, armorers, and ground crewmen. Officers and men worked from daylight until dark under less than ideal conditions. Drifting sand and dust filtered into engines, increasing maintenance difficulties, and the swamps of the Everglades which bordered the field made every forced landing into a major rescue and recovery problem. Haste and overwork took their inevitable toll. The force lost four officers and three enlisted men killed in accidents.

On 16 June 1918, Cunningham organized a headquarters detachment and four squadrons, designated A, B, C, and D. Geiger and McIlvain commanded A and B respectively; Captain Douglas B. Roben commanded C, while First Lieutenant Russell A. Presley commanded Squadron D. The four squadron commanders at once left for France, where they selected two airfield sites and established liaison with the Northern Bombing Group. On 10 July, the 1st

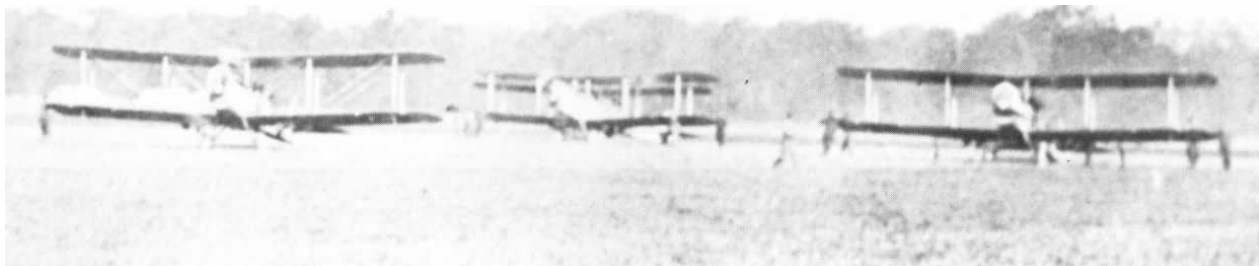
Aviation Force received orders to embark for the front. At this time, a British aviator sent to appraise the squadrons' state of readiness pronounced them fit for combat, but a Marine aviator who was there had a different view:

We had flown nothing but Jennies. We got one DH-4 [the bombing plane they were to fly in France], and all of us in Miami got one flight in the first DH-4. . . . We had one flight. Our gunnery training had consisted of getting into the rear seat and using a Lewis gun, shooting the targets on the ground. None of us had ever fired a fixed gun in our lives. None of us had ever dropped a bomb in our lives. . . .²⁰

Whether ready or not, most of the personnel of the 1st Aviation Force headed for France in the expectation that their aircraft and equipment would be waiting there for them when they arrived. On 13 July, the force, less Squadron D which remained behind temporarily, boarded trains at Miami. On the way to New York, their port of embarkation, they stopped over at Philadelphia to receive an official band-accompanied farewell from the city which had strong claims to the title of birthplace of Marine aviation. On 18 July, the 107 officers and 654 enlisted men of the three squadrons sailed from New York for France on board the transport USS *De Kalb*.

Marine Aviation Expands

The 1st Aviation Force left behind it a Marine air arm that was emerging rapidly from confused improvisation into steady, businesslike expansion. At Miami, the Marine Flying Field, as the Curtiss Field had been renamed, had grown from a sleepy airstrip bordered by a couple of wooden-framed hangars into a bustling military complex of hangars, storehouses, machine



DH-4s on a flight line in France in 1918. The planes are taking off for a bombing raid on German lines. (Photo from the Goodyear Kirkham collection).

shops, tent camps, and gunnery and bombing ranges. The field continued in operation after the 1st Aviation Force left, first to complete the formation of Squadron D and then to train additional aviation personnel and to serve as the base for Marine air patrols of the Florida coast. In Washington, Captain Harvey B. Mims, who kept in close touch with Cunningham in France, acted as director of Marine aviation.²¹

During 1918, the authorized strength of Marine aviation was set at 1,500 officers and 6,000 men. To reach this number of personnel, Marine aviation, besides recruiting more officer pilots, began training enlisted aviators. The first class of 25 candidates entered this program on 10 July 1918.²² These Marines, who had to meet special educational and physical qualifications,* received the temporary rank of gunnery sergeant. They first attended a 10-week academic course at the Massachusetts Institute of Technology. From there they went to Miami for flight training. Candidates who successfully completed flying school received commissions as second lieutenants in the Marine Reserve Flying Corps. At Great Lakes Training Station in Illinois, a Marine section of the Navy Mechanics' School prepared enlisted Marines for ground duty in aviation, as did a similar school in San Diego.²³

The 1st Marine Aviation Force in France

While Marine aviation expanded in the United States, its vanguard in the war zone, the 1st Aviation Force, disembarked at Brest on 30 July. Administrative and supply problems dogged Cunningham and his Marine aviators from the day of their landing. These problems were compounded by a lack of co-ordination and firm understanding between Cunningham's headquarters and that of Captain David Hanrahan, USN, commanding officer of the Northern Bombing Group.²⁴

Upon landing at Brest, Cunningham found that no arrangements had been made to move his squadrons the 400 miles to their selected base locations near Calais. Cunningham solved this problem by requisitioning a French train for the two-day trip. When he sent a working party to the Navy supply base at Pauillac, 30 miles

from Bordeaux, to collect the force's motor vehicles, the officer in charge discovered that "All our . . . trucks . . . had gotten mixed up and gotten into the Army pool, and I had to go down there, drag em out of that pool, and find drivers, and send those things North."²⁵

After they reached Calais, the Marines, billeted temporarily in a British rest camp, began work at the landing field sites selected by their advance party. Squadrons A and B were located at Oye, a town between Calais and Dunkirk. Squadron C occupied a site at LaFresne, 12 kilometers southwest of Calais, while Cunningham established his headquarters at the town of Bois en Ardres.

Cunningham then discovered that he was not going to have any aircraft for a while. Before leaving for France, he had secured from the Army 72 DH-4 bombers. These British-designed machines, part of a large number being manufactured in the United States, would be shipped to France and assembled there for issue to the Marines. The planes duly arrived at Pauillac at about the time the 1st Aviation Force disembarked at Brest, but due to delays in assembly, the first one did not reach the squadrons until 7 September, and Cunningham learned that most of them by some administrative oversight had been shipped to England. Cunningham "in desperation" struck a bargain with the British. They had a surplus of air frames for the DH-9A, a modification of the DH-4, but no engines; the Americans had in Europe a surplus of the Liberty engines for which the DH-9A was designed but few airplanes in which to put them. Cunningham, with the approval of U.S. Navy authorities, agreed with the Royal Air Force that for every three Liberty engines delivered to the British, they would return one to the Marines mounted in a completely equipped DH-9A. By this means and as the result of the eventual delivery of some of his Army machines, Cunningham by the time of the Armistice had secured 36 airplanes, about half of his force's planned strength. Of these, 20 were DH-9As and 16 were DH-4s.²⁶

Unable to get his fliers into the air at once in American machines, Cunningham again turned to the British.** He knew that the RAF had an abundance of aircraft, but a shortage of pilots as a result of years of combat losses. Within nine

* Candidates had to be enlisted Marines, have a "superior" physique, and weigh between 135 and 165 pounds. Age limits were 19 to 39 years. Candidates had to have completed at least two years of college.

** The Marines were stationed behind the sector of the front held by the British armies rather than in the American sector which was to the south and east of them.



The first aerial resupply mission in Marine aviation history occurred 2-3 October 1918 when Marine Captain Robert S. Lytle (right) and Gunnery Sergeant Amil Wiman helped airdrop 2,600 pounds of food and stores to a French infantry regiment. Also taking part in the action were Marine Captain Francis P. Mulcahy and Gunnery Sergeant Thomas L. McCullough. (Photo from the Goodyear Kirkham collection).

days of the 1st Aviation Force's arrival in France, he had arranged for Marine pilots to fly bombing missions with RAF Squadrons 217 and 218, which operated DH-4s and DH-9s, the same types of aircraft the Marines were to receive. Soon Marine pilots, many of whom added British overseas caps and canes to their uniforms, were flying combat missions over the German lines. They served with the British in rotation, so that every Marine aviator would go on at least three raids.

The Marines now completed their training under fire and under the tutelage of veterans whom they came to admire and respect. Karl Day, who flew with Squadron 218, a mixed lot of men from all the British dominions, said of the outfit's commander, Major Bert Wemp, a Canadian: "He taught me what it means to be an officer and a gentleman. He was a remarkable commanding officer." The British on their side welcomed the American reinforcements but treated them on missions with grim realism.

"They put us—always the newcomers were the last on the right, in the 'V', because if you got shot you hadn't lost anything." 27

These joint operations with the British produced some notable Marine achievements. On 28 September, while flying with Squadron 218, First Lieutenant Everett S. Brewer and Gunnery Sergeant Harry B. Wersheiner shot down the Marines' first enemy aircraft in a dogfight over Courtemarke, Belgium. Both Marines were severely wounded in the engagement. On 2 and 3 October, Marine airmen, also operating with Squadron 218, flew the first aerial resupply mission in the history of Marine aviation. On those days, Captain Francis P. Mulcahy and his observer, Gunnery Sergeant Thomas L. McCullough, and Captain Robert S. Lytle and his observer, Gunnery Sergeant Amil Wiman, flew through heavy German fire to drop over 2,600 pounds of food and stores to a French infantry regiment isolated by mud and surrounded by enemy near Stadenburg.

While the aircrews flew with the British, the rest of the Aviation Force worked on their flying fields. Without engineering equipment, each squadron had to build its own runways, hangars, living quarters, and other base facilities. The Marines dug sugar beet plants out of the flat fields with shovels and then levelled their airstrips with a borrowed Navy steamroller. They secured from the British large amounts of construction material, including portable canvas and wood hangars. Housing for pilots and crews went through three stages: tents with dirt floors, tents with wooden frames and floors, and finally portable wooden buildings boasting stoves, cots, and furniture made from shipping crates. In spite of his men's efforts, however, Cunningham in November did not consider them well enough housed to stay in their camps through the winter.²⁸

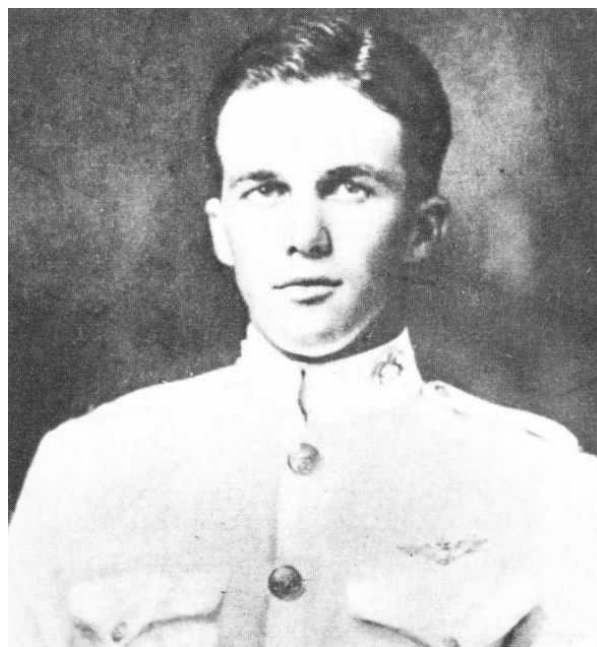
On 5 October, Squadron D arrived at La-Fresne with 42 officers and 183 enlisted men, raising the strength of the entire Force to 149 officers and 842 rank and file. The Marines now redesignated their squadrons as Numbers 7, 8, 9, and 10 to conform to the Northern Bombing Group's identification system.

The mission of the force also changed at this time. Under pressure from the Allied offensives then in progress, the Germans evacuated their submarine bases on the Channel coast, eliminating the Marines' planned mission. Attached to the RAF, the Marine squadrons now shifted to general support of the British and Belgian armies, which were pressing their final assault against the crumbling German lines.

By 12 October, the Marine squadrons had received enough of their own DH-4s and DH-9As to begin flying missions independently of the British.²⁹ Their DH-4s, similar to those they had been flying in combat with the RAF, were versions of one of the more successful World War I aircraft. First flown in 1916, this British-designed two-seater biplane had a wingspread of 42½ feet and a length of 30½ feet. It was built of wood and fabric like other aircraft of the time, but had the front part of its fuselage covered with plywood. The model used by the Marines, which was fitted with a 400-horsepower American Liberty engine, could achieve a top speed of about 125 miles per hour and had a ceiling of 17,500 feet. It had a range of 270 miles and could climb to 10,000 feet in 14 minutes. Armed with four .30-caliber machine guns (two fired by the pilot through the propeller and two on a ring mount fired by the observer) and able to carry

460 pounds of bombs in wing racks, the DH-4 had enough speed, maneuverability, and fire power to hold its own against contemporary fighters. With its easily ruptured, pressurized fuel tank located between the pilot and the observer, the DH-4 received the ominous nickname of "The Flaming Coffin," less from a tendency to burn when hit by enemy fire than from the likelihood of its catching fire during otherwise minor noncombat mishaps.

With the British, the Marines had flown the DH-9, and as a result of Cunningham's negotiations their own squadrons received DH-9As as well as DH-4s. The DH-9, developed in 1917 by the makers of the DH-4, had been intended as an improvement upon the earlier machine. It was identical in construction and dimensions to the DH-4, but had its fuel tank located in the fuselage ahead of the pilot's cockpit, which was placed further toward the tail and closer to the observer's position. This allowed the crew to communicate more easily with each other in flight. However, the early DH-9s, underpowered and plagued by engine trouble, proved much inferior in performance and reliability to the DH-4. Accordingly, when the American Liberty engine became available late in 1917, the British modified the DH-9 for it, producing the DH-9A. The new version had a wider wingspread than



Second Lieutenant Ralph Talbot and his observer, Corporal Robert G. Robinson, earned the Navy Medal of Honor for their actions in fighting off 12 German aircraft on 14 October 1918.



The colors of the 1st Marine Aviation Force being presented by Mme. Trouille, wife of the Mayor of Ardres, to 2d Lieutenant William E. Russell, USCMR, Force Intelligence Officer, 27 November 1918. (Photo from the Alfred A. Cunningham Papers).

either the DH-4 or the DH-9, an enlarged radiator for the 400-horsepower Liberty, and a more strongly framed and braced fuselage. This was the aircraft Cunningham obtained. For all practical purposes, it was identical in performance, range, bomb load, and armament to the DH-4, and like the DH-4 it was manufactured under license by United States aircraft firms.³⁰

On 14 October 1918, Captain Robert S. Lytle of Squadron 9 led the Marines' first mission in their own aircraft. With a flight of five DH-4s and three DH-9As, he struck the German-held railroad yards at Thielt, Belgium, dropping 2,218 pounds of bombs.

The bombings met no serious resistance, but on the way back to base, 12 German fighters (eight Fokker D-VIIs and four Pfalz D-IIIs) intercepted the Marine formation. In the ensuing melee, the Germans, following their usual tactics when fighting bombers, concentrated their attack on one machine, the DH-4 piloted by Second Lieutenant Ralph Talbot, one of the Naval Reserve officers who had transferred to Marine aviation. Talbot's observer, Corporal Robert G. Robinson, an expert gunner, quickly shot down one attacker, but two others closed in from below, spraying the DH-4 with bullets, one of which shattered Robinson's elbow. After clearing a jammed machine gun, Robinson continued to fire until hit twice more, while Talbot frantically maneuvered for advantage. With Robinson unconscious in the rear seat, Talbot brought down a second German with his front guns, then put the plane into a long dive to escape the rest of the enemy. Crossing the German lines at an altitude of about 50 feet, he landed safely at a Belgian airfield, from which Robinson was taken to a field hospital. He recovered from his wounds. For this exploit, Talbot and Robinson both received the Medal of Honor.

Captain Lytle also had a narrow escape. While he was trying to maneuver to aid Talbot, his engine failed; he glided back to the lines and brought his plane down immediately in front of the Belgian forward positions. Lytle and his observer scrambled out of the plane into the relative security of the trenches, and later that night Marine ground crews dismantled the aircraft and brought it back to base. The rest of the Marine formation returned safely to their own fields.³¹

Between 14 October and 11 November, the Marines carried out a total of 14 raids. They bombed railway yards, canals, supply dumps, and airfields. Always flying without fighter escort, they frequently braved German antiaircraft



On 22 October 1918, the first Marine aircraft was destroyed as a result of enemy action when seven German aircraft attacked and shot down a plane flown by 2d Lieutenant Hurvey G. Norman. Norman and his observer, 2d Lieutenant Caleb C. Taylor, were killed in the crash.

fire and had several more clashes with German planes. In one of these, on 22 October, seven enemy fighters separated the craft piloted by Second Lieutenant Harvey G. Norman from the formation and shot it down, killing both Norman and his observer, Second Lieutenant Caleb W. Taylor. This was the first Marine aircraft lost to enemy action.

During their tour of duty in France between 9 August and 11 November, the Marines of the 1st Aviation Force took part in 43 missions with the British, besides launching their own 14 raids. According to later estimates, they dropped 15,140 pounds of bombs while flying with the British and 18,792 pounds of bombs on their own missions. At a cost of four pilots killed and one pilot and two gunners wounded, they scored four confirmed kills of German fighters and claimed eight more. In addition to combat casualties, the Marines lost Lieutenant Talbot killed on a test flight and four other officers and 21 enlisted men dead in an influenza epidemic which for a while in October paralyzed operations. During their brief period in combat, the Marines of the 1st Aviation Force won a total of 30 awards and decorations, including Talbot's and Robinson's Medals of Honor and four Distinguished Service Medals.³²

Even before the signing of the Armistice,

Cunningham requested the early return of the 1st Aviation Force to the United States. He did this partly to prevent his ill-housed men from having to spend the winter in Belgium and Northern France and partly because, in his words, "I think we could accomplish much more at home, getting our Aviation service established under the new conditions of peace."³³ To the disappointment of some of his men, who had hoped to see Paris and Germany before their

adventure ended, Cunningham obtained what he wanted. The 1st Aviation Force sailed for home on the USS *Mercury* in December 1918.

Marine aviation during the war had grown from a few men and machines into an organized branch of the Corps, with its own bases and training programs. It had proven itself in combat. Now it would have to prove itself in peacetime to Congress, the American public, and the rest of the Marine Corps.

CHAPTER III

ADVANCE TOWARD MATURITY, 1919-1929

Battle for Survival, 1919-1920

Major Cunningham (he had received a war-time promotion to temporary rank on 28 August 1918) returned home with the 1st Aviation Force and resumed his position as officer in charge of aviation. At this time, the Marine air arm which he had done so much to create contained 282 officers and 2,180 enlisted men, counting the units in the Azores and Miami as well as the Marine squadrons in France.¹

Postwar demobilization began immediately, for the Marine air arm as for the other services. The 1st Aviation Force disbanded at Miami in February 1919, and most of the remaining Marine air personnel and equipment were dispersed to Parris Island and Quantico. From the remnants of his establishment, Cunningham formed a new Squadron D, which went to the Dominican Republic to support the 2d Provisional Brigade stationed there, and Squadron E, which deployed to Haiti to support the 1st Provisional Brigade. In September 1919, the Marine Flying Field at Miami was closed down.²

The Marine Corps, along with the other services, began a desperate struggle to persuade Congress to maintain at least their prewar personnel strength with the required bases, facilities, and equipment. Within this larger battle over appropriations and legislation, Major Cunningham fought for permanent status for Marine aviation. He labored under the disadvantage that the Marine air arm had no permanent bases or facilities and no precedent for peacetime strength or organization. Cunningham also realized that he would face opposition from within the Marine Corps. He summed up the nature and reasons for this opposition: "One of the greatest handicaps which Marine Corps aviation must now overcome is a combination of doubt as to usefulness, lack of sympathy, and a feeling on the part of some line officers that aviators and aviation enlisted men are not real Marines." Much of this attitude within the

Marine Corps, as Cunningham pointed out, resulted from the fact that the Marine air squadrons in France, through no fault of their own, had not been allowed to support the Marine brigade.³

In an appearance before the General Board on 7 April 1919 and through an article published in the *Marine Corps Gazette* in September 1920, Cunningham sought to persuade skeptics within and outside the Marine Corps of the value of aviation. In these presentations, he defined what is still the primary mission of Marine aviation and anticipated the development of the modern air-ground team. He started his argument with the assumption, as he put it in his *Gazette* article, "that the only excuse for aviation in any service is its usefulness in assisting the troops on the ground to successfully carry out their operations." For Marine aviation, this would mean primarily support of the advance base and expeditionary forces in seizing and holding assigned objectives.

In his *Gazette* article, the principal published expression of his concepts of Marine aviation, Cunningham outlined in detail the possible roles of Marine air squadrons in supporting an opposed beach landing. Anticipating features of World War II operations, he discussed aerial reconnaissance and suggested that bombers could isolate the landing area by attacking railroads, roads, and enemy re-inforcements. During the actual landing, he wrote, "the planes could with machine gun fire and small fragmentation bombs so demoralize resistance as to make the task of landing much easier and safer." He emphasized the need for close and constant communication between air and ground units and pointed to the usefulness of radio in maintaining such communications. He also expanded on the ways in which aviation could aid the Marines in operations against Central American guerrillas. Marine fliers during the 1920s would illustrate these passages of his article by their actions.⁴



A cross-country "Jenny," based at the Marine Flying Field, Miami, Fla., about 1922. (Photo from Goodyear Kirkham collection).



A Thomas-Morse (MB-3) postwar fighter. In 1922, 11 MB-3s were transferred from the Navy to the Marines. (Marine Corps Photo 717548).



The DH-4B appeared in many guises, including this O2B-1 of VO-3M (Observation Squadron 3) with the 1st Aviation Group in 1921, which served the Marines as an observation and attack plane. (Nat Archives RG 127-G Photo A402979).



Arrow indicates a Fokker D-7, one of two D-7s to fly with the Marine Corps. The D-7s were captured during World War I. This inspection lineup including VE-7s and MB-3s is at Quantico in 1922. (Photo courtesy Goodyear Kirkham collection).

As a result of the efforts of Cunningham and others, Marine aviation won its battle for survival. After an 18-month legislative struggle, Congress established the Marine Corps at approximately one-fifth the manpower strength of the Navy, or 26,380 men. It then authorized an additional 1,020 Marines for aviation, bringing the total Marine force to 27,400. Along with its manpower, Marine aviation soon received permanent bases. By the end of 1920, air stations were under construction at Quantico and Parris Island, and the establishment of a field at San Diego had been approved. The Quantico and Parris Island installations would serve as bases for the air elements of the Atlantic coast expeditionary force, as well as centers for advanced flight and tactical training. The planned San Diego field would perform the same functions for the air arm of the Pacific coast expeditionary force.⁵

Organization and Mission, 1920-1929

With its manpower and bases assured, Marine aviation could establish a stable organization.⁶ At Headquarters Marine Corps, Cunningham's position received formal recognition in January 1919, when he was assigned to duty as head of the Marine section of naval aviation. This section had charge of the recruitment and training of Marine air personnel and acted as the channel for aviation supply requisitions to both the Navy and the Marine Corps. Because Marine aviation continued to draw heavily upon the Navy for aircraft, supplies, and training facilities and because Marine air squadrons would operate in close co-operation with naval units, Cunningham and his successors were placed under the authority of both the Major General Commandant and the Director of Naval Aviation. The latter official in turn was part of the office of the Chief of Naval Operations. As Cunningham described it in March 1920:

This office is so closely associated with the office of the Director of Naval Aviation as to be for all practical purposes a part of that office. In other words, it is a closely connecting link between the Major General Commandant's office and the Director of Naval Aviation regarding purely aviation matters and handles all Marine Corps matters which refer to aviation. This arrangement is working very satisfactorily and it is recommended that it remain in force. . . .⁷

Within Headquarters Marine Corps, the Avia-

tion Section on 1 December 1920 was put under the control of the newly formed Division of Operations and Training. This office would oversee the materiel and personnel of the air arm and would direct the joint training of aviation and ground forces. This reassignment of the Aviation Section thus promoted closer ties between Marine aviation and the rest of the Corps, but the effectiveness of the arrangement depended heavily on the interest in aviation of the Directors of Operations and Training.

Major Cunningham remained at the head of the Aviation Section until December 1920, when he left the office as the result of an unusual set of circumstances. Cunningham in 1920 was not the senior Marine aviator in rank. That distinction belonged to Lieutenant Colonel Thomas C. Turner, who had entered the Marine Corps as a second lieutenant in 1902 and reached the permanent rank of major by 1917.* An aviation enthusiast like Cunningham, Turner learned to fly in his spare time while commanding the San Diego Marine barracks. With Marine Corps permission, he took his flight training at the Army Signal Corps Aviation School at San Diego, and when the United States entered World War I, he requested and received an assignment to aviation duty with the Army. He served with the Army at Ellington Field, Texas, throughout the war and also on 14 March 1918 received his wings as a naval aviator. Cunningham, who regarded Turner as a rival, kept him out of Marine aviation. Returning to the Marine Corps in 1919, Turner served with ground troops in Haiti, where he was cited for valor during a bandit attack on Port au Prince. In 1920, he requested aviation duty with the Marines, and Major General Commandant John A. Lejeune, a friend of Turner's, recognized his seniority and made him head of aviation. Cunningham received command of the squadron in the Dominican Republic.⁸

Cunningham commanded the squadron in Santo Domingo for a year and a half. Then, under a policy which he himself strongly advocated of returning Marine fliers to ground duty after five-year tours in aviation, he was transferred to a series of non-flying staff billets. In 1928, he requested a return to aviation duty but was turned down on grounds that no administrative posts were open and that he was too old to

* Cunningham did not receive his permanent promotion to major until 4 March 1921.

resume flying. He retired in 1935 and died four years later. His contribution to Marine aviation is best summed up in his own words, written in 1928 to Major General Commandant Lejeune:

I was the first Marine officer to fly and spent the best years of my career working with enthusiasm to advance Marine Corps aviation. I did the unappreciated pioneering work and stuck by it during the time when no one considered it important enough to be desirable duty, paying the usual toll which pioneering demands. I was in charge of Marine Corps aviation during its first ten years and built it, mostly under the handicap of lack of interest in all aviation, from one officer to 300 trained pilots and about 3,000 mechanics, personally arranging for the details of personnel, material, training and organization.⁹

Whatever personal differences he may have had with Cunningham, Turner shared his predecessor's devotion to the interests of Marine aviation. As head of the Aviation Section, he aggressively continued Cunningham's work of building up the air service, personally participating in long-distance flights to demonstrate aviation's capabilities. On 2 March 1925, he turned the Aviation Section over to Major Edwin H. ("Chief") Brainard, still another shrewd and determined advocate of Marine aviation. Brainard during his tenure emphasized the recruitment of more officer pilots and directed the revival and expansion of the Marine Aviation Reserve.¹⁰ In 1929, when Brainard left the Marine Corps for private industry, Turner, who had finished a tour in command of the squadrons then serving in China, resumed his post as head of the Aviation Section.

Throughout the decade, the office which directed the efforts of Marine aviation remained modest in size. Captain Louis E. Woods, who reported there for duty in 1926, found that the section then consisted of Major Brainard, Major Ford O. ("Tex") Rogers, and himself plus three civilian clerks. Under Brainard's overall direction, Wood "had more to do with personnel and training and so forth . . . and Tex had more of the materiel end."¹¹

While Cunningham, Turner, and Brainard represented Marine aviation in Washington, more or less permanent operating organizations took shape in the field. On 30 October 1920, Major General Commandant Lejeune approved an air table of organization which provided for aircraft "wings," each of which was to be composed of two to four squadrons which in turn were divided into "flights." The existing aircraft and personnel were formed into four squadrons, each of two flights. The 1st Squadron (Flights A and B) consisted of the planes and crews in the



Lieutenant Colonel Thomas C. Turner, chief of Marine Aviation from 1920-1925 and 1929-1931. (Photo from the Goodyear Kirkham collection).

Dominican Republic. The 2d and 3d Squadrons (Flights C, D, E, and F) were stationed at Quantico, which throughout the decade contained the largest concentration of Marine aircraft and aviation personnel. The 4th Squadron (Flights G and H) was based at Port au Prince, Haiti, to support the 1st Provisional Brigade. The detachment at Parris Island, designated Flight L, was under orders to prepare to move to Guam.

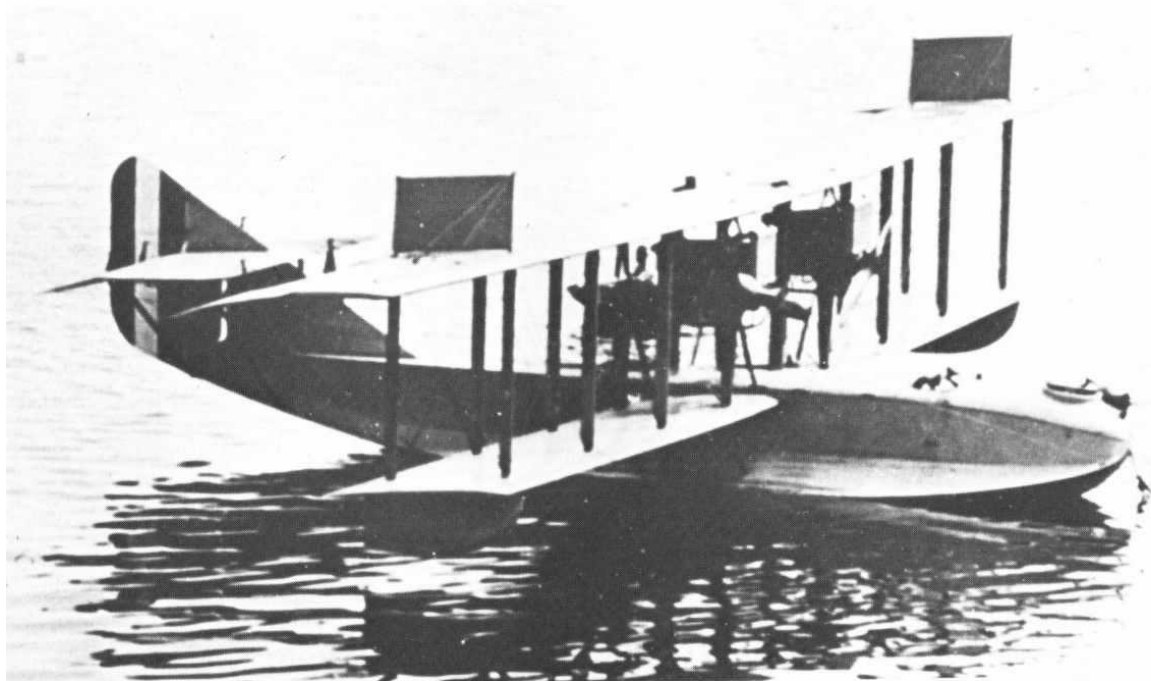
During the decade, this basic organization underwent repeated redesignations of units and rearrangements of men and equipment within units. These occurred in response to changing operational requirements and deployments, to changes in naval air organization and nomenclature, and to growing specialization and sophistication in military aviation. They also often reflected the pressure of continued scanty appropriations, as Marine aviators tried to stretch limited manpower and equipment to meet their many responsibilities.

In 1922, the units at Quantico were redesignated collectively as the 1st Aviation Group and rearranged into three functionally specialized squadrons—one of observation planes, one of fighter planes, and one kite balloon squadron used for reconnaissance and artillery observa-

tion. Within the squadrons, flights now were retitled divisions to conform to Navy nomenclature of the time. Shortages of men and machines allowed each squadron to keep only one or at most two of its three divisions on active status. In 1924, with manpower made available by the Marine withdrawal from the Dominican Republic, the Marines formed Service Squadron 1, attached to the Aviation Group at Quantico. This non-flying unit contained truck drivers, riggers, mechanics, and other ground crew specialists. Like the flying squadrons, it had only one of its three divisions manned and active.

The terms "squadron" and "division" as used in the 1920s may be misleading to one familiar with today's aviation organization. Their meaning at this time, as well as the overall purpose of the organization adopted, was explained in 1926 by Major Brainard. Marine Corps aviation, he told students at Quantico:

... is organized along Navy lines, with the division as the administrative unit and the squadron as the tactical unit. In order to have an organization capable of large expansion in time of emergency, the peacetime squadrons are only one-third their war strength, i.e., one division active and two inactive. A division consists of 75 enlisted men and 10 commissioned officers. This gives the the nucleus around which to recruit the two inactive divisions, and the addition of



The F5-L flying boat, with its wingspan of 103 feet, was the largest and most modern patrol plane in the Marines' inventory in the early Twenties. (Nat Archives RG 127-G Photo 517539).



A Vought VE-7, a two-seater training version of this versatile and reliable, if slow, Marine aircraft of the early Twenties. (Nat Archives RG 127-G Photo 514919).



A single-seat VE-7F in 1922. Marines used these aircraft for a variety of missions. (Nat Archives RG 127-G Photo 515891).



Vought VE-9. In 1925, the 1st Aviation Group at Quantico had one of these, an improved version of the VE-7. (Nat Archives RG 127-G Photo 517532).



This O2B-1, in 1926, an improved DH-4B with a metal fuselage, carries on its side the name of its pilot, Major Charles A. Lutz, a successful Marine air racer. (Nat Archives RG 127-G Photo 525726).

a squadron commander and staff gives a war strength unit which should be fairly efficient and capable of shortly performing any task. A division consists of six planes active and three in reserve. Therefore, a full strength squadron has eighteen active planes and nine in reserve, and in addition two planes attached to squadron headquarters and one transport.¹²

In 1924, Marine aviation established itself on the West Coast when Observation Squadron 1 went by ship directly from the Dominican Republic to San Diego. The squadron became the nucleus of the 2d Aviation Group, created in 1925, which eventually consisted of one observation squadron, one fighting squadron, and one headquarters squadron. During the same period, the Marines were able to form two new squadrons at Quantico, one observation and one fighting. In August 1926, to complete the integration of aviation into the Marine expeditionary forces it was intended to support, Headquarters Marine Corps redesignated the 1st Aviation Group as Aircraft Squadrons, East Coast Expeditionary Forces, and the 2d Aviation Group as Aircraft Squadrons, West Coast Expeditionary Forces. This change put the squadrons under the supervision of the commanders of the respective Expeditionary Forces for purposes of training, administration, and operations.*

Besides these two principal Marine air groups, there remained throughout the 1920s Observation Squadron 2, as it now was designated, in Haiti and Scouting Squadron 1 on Guam, to which it had moved from Parris Island in 1921. The air units which deployed to China and Nicaragua later in the decade were drawn from the East and West Coast Expeditionary Force squadrons.

As the organization of the Marine air arm took shape during the 1920s, so did its concept of mission. In September 1926, in a lecture to student Marine officers, Major Brainard summed up the then-current doctrine. He defined three tactical missions for Marine aircraft: observation, which included artillery spotting and aerial photography; "light bombardment"; and "fighting

aviation," air-to-air combat to control the skies over Marine areas of operation. In Brainard's definition, this third category of operations also included low-altitude bombing and strafing of enemy ground troops. Turning to the broader reason for being of Marine aviation, Brainard continued:

All our training and war plans are based on the idea that the Marine Corps will act as an advance base force to seize and hold an advance base from which the Navy can operate against the enemy. . . . In any war with a major force our fleet is going to be fully occupied and the advance base force will have to . . . use its own aviation for its information, protection from attack from the air and assistance in holding the base after seizure. I do not believe that the commander-in-chief is going to detach any first line carrier for this duty and for that reason Marine Corps Aviation is of paramount importance in the force. It also seems self-evident that there would be far better cooperation and results if the Marine force had Marine aviators rather than some Naval unit temporarily attached.

Brainard went on to urge the student officers to familiarize themselves with the techniques, problems, and potentialities of aviation, and he articulated the emerging vision of air and ground as a close-knit team. "To obtain maximum results, aviation and the troops with which it operates should be closely associated and know each other, as well as have a thorough knowledge of each other's work." Finally, in the light of controversies then raging in other services, he disavowed any aspirations to independence on the part of Marine aviation, declaring that "Marine Aviation is not being developed as a separate branch of the service that considers itself too good to do anything else. Unlike the Army Air Service, we do not aspire or want to be separated from the line or to be considered as anything but regular Marines."¹³

Men and Machines, 1920-1929

Throughout the decade, the authorized manpower of Marine aviation remained constant: 100 flying officers and 1,020 enlisted men. The actual number in service often fell much below these figures. In 1921, for instance, only 59 officers and 824 men were available for air duty; in 1923, the number dropped to 46 officers and 756 enlisted. Then it increased slowly and gradually during the rest of the decade.¹⁴

The principal source of officer-pilots remained the regular Marine officer corps. One function of the Aviation Section at Headquarters was to

* A dispute arose between the Navy and the Marines over command of the West Coast squadrons. The question was whether they should be under the authority for administration, operations, and training of the commanding officer of the West Coast Expeditionary Force or of the commanding officer of the Naval Air Station at San Diego from which they were flying until the Marine field was completed. Finally, 2 September 1926, the Chief of Naval Operations put them under NAS San Diego until the Marine field was ready, when they would pass to West Coast Expeditionary Forces.



Major Edwin H. (Chief) Brainard, head of Marine Aviation from 1925-29, beside his personal F6C-4 in 1927. (Nut Archives RG 127-G Photo 514772).



A rare photo of the first model of the Curtiss Hawk fighter, the F6C-1. There were only nine F6C-1s built. (Marine Corps Photo 527944).

enlist potential aviators from among the officer candidates and newly commissioned second lieutenants. Louis Woods remembered: "We did a lot of work trying to get pilots. We wrote letters. We looked over all the records and those we thought had the age and the background for aviation we tried to get. . . ." ¹⁵ In 1929, with accidents creating vacancies in pilot ranks and operations in Nicaragua demanding more men, Colonel Turner sent two of his pilots with a new Ford tri-motor transport to the officer candidate school, then located at Philadelphia, to sell the incoming cadets on aviation. For about a month, the two officers held informal ground training sessions every morning and then in the afternoons took plane loads of the students up for demonstration flights. The effort resulted in an increased number of applicants for aviation duty. ¹⁶

Even if all 100 authorized officer billets could be filled, however, this number still fell short of the number of aviators the Marines needed to meet operational commitments. The Aviation Section could not enlarge the authorized number of flying officers because the Naval Appropriation Act of 4 June 1920 had fixed the commissioned strength of the entire Corps at 1,093, and the ground forces could spare no additional officers. Accordingly, Marine aviation attempted to remedy the pilot shortage by recruiting and training enlisted aviators. This was possible because the Appropriation Act limited only the

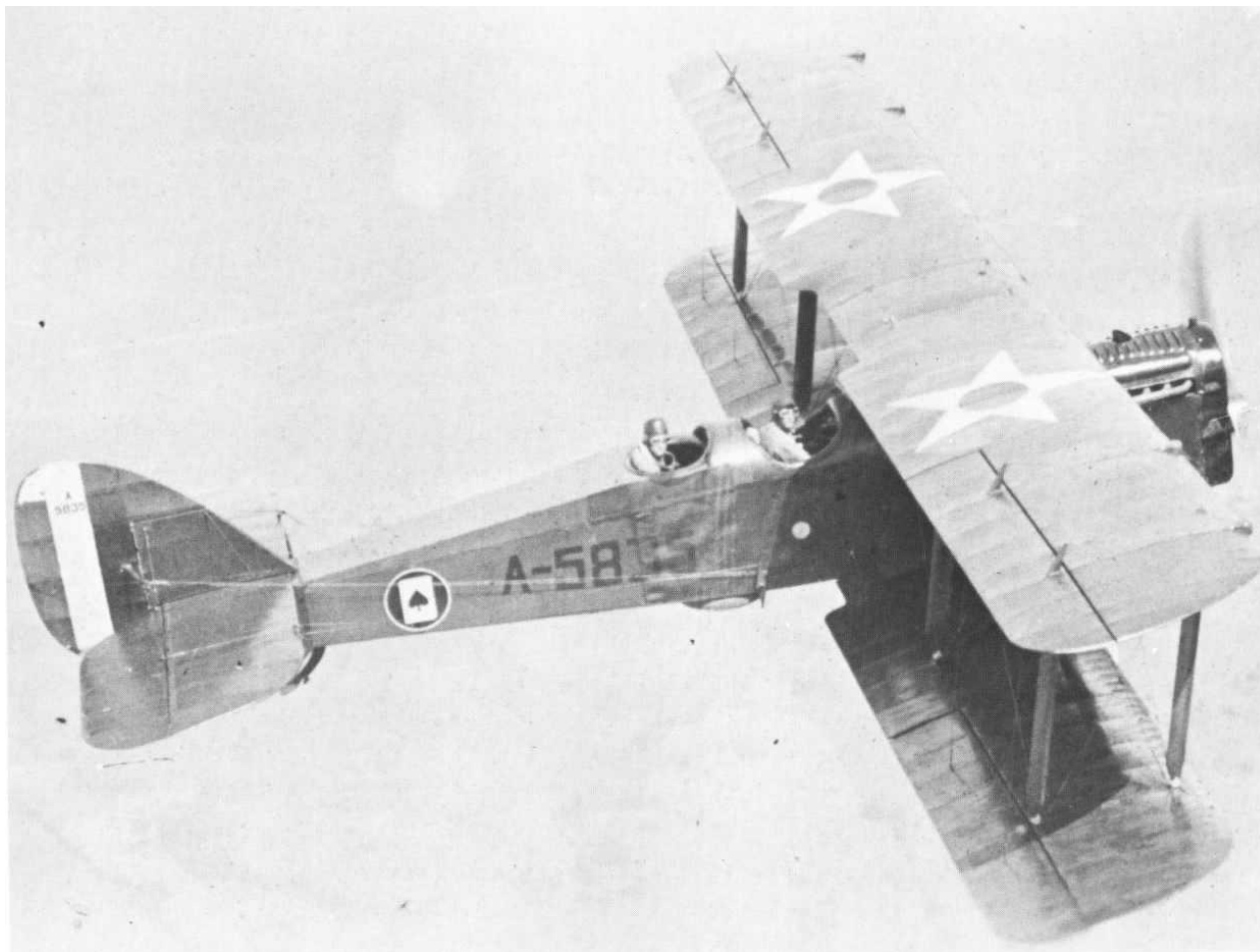
officer strength—not the pilot strength. Through this means, the Marine Corps slowly increased its force of pilots. In a wartime expansion, the enlisted men so qualified could be commissioned and assume command positions commensurate with their experience and training.

Another potential source of men for wartime expansion was the Marine Aviation Reserve. After World War I, when most Marine fliers had held reserve commissions, the reserve remained inactive from 1918 to 1928. In 1928, five Reserve aviators, most of them World War I veterans, were recalled to active duty. After brief refresher training courses they reported to Naval Reserve Aviation bases to organize new Marine Reserve Aviation units. On 1 July 1928, First Lieutenant Livingston B. Stedman formed a unit at Sand Point, Washington, while First Lieutenant Benjamin Reisweber organized a second one at Rockaway Beach on Long Island. Later in the month, two more units were organized, one at Squantum, Massachusetts, and the other at Great Lakes, Illinois.

Commanding officers of the reserve units selected applicants, mainly college students, for pilot training and commissions as second lieutenants, USMCR. Enlisted reservists were assigned to training as mechanics and ground crewmen. Officer candidates who met Marine mental and physical qualifications went on active duty at once for flight instruction, taking short basic courses at San Diego and Pensacola. They then



The VE-7F was a single-seat version of the VE-7 trainer used by the Marine Corps. This one, made by the Naval Aircraft Factory, was assigned to VO-1M in Santo Domingo, Dominican Republic, in 1922.



Major Alfred A. Cunningham at the controls of a DH-4B over Santo Domingo in 1922. (Photo from the Goodyear Kirkham collection).

received their commissions and later returned for one year active tours and advanced training with either the East or West Coast Expeditionary Forces.

James E. Webb, the future head of the National Aeronautics and Space Administration, who entered the reserve in the summer of 1930, recalled of the program:

In those days they would give you one year to get your wings and then one year of active duty, and then you would be pushed out. The contract—they made it clear in the beginning they would not keep you beyond one year after graduation, because they wanted to train more. The whole purpose was to get more pilots available, then you could fly in the Reserve units on weekends to keep up your proficiency and be available to the service.

In fact, Marine reserve pilots on inactive status had to report twice a month at their own expense to the nearest Naval Reserve base to retain their flying proficiency.

In spite of inadequate funding, the Marine Aviation Reserve steadily expanded during the late 1920s. By the end of the decade, it had established solid foundations and was beginning to build toward its important role in World War II and subsequent national emergencies.¹⁷

New Marine pilots, both regular and reserve, received basic flight training at Navy fields, and regulars then usually took the Army pursuit course at Ellington Field, Texas, or Selfridge Field, Michigan. Both regulars and reserves received advanced instruction at Marine bases such as Quantico. This instruction included an increasing amount of practice "in working out tactical problems with troops on the ground." Enlisted Marines went through the mechanics' course at Great Lakes Naval Training Center, Illinois, and studied aerology, radio, and other technical subjects at the appropriate Navy schools. Throughout the decade, a few Marine

officers and men continued to receive lighter-than-air flight training.¹⁸

Along with the training program went an increasing emphasis on air safety. Although aircraft performance and reliability had improved considerably by prewar standards, accidents continued to be frequent, almost expected as professional hazards of aviation. The number of fatalities, listed with grim regularity in every annual report on Marine aviation, caused concern at all levels of command. Certainly one cause of the many smashups was the inadequacies of early Marine landing fields. The words of veterans recalling those days bring the dangers vividly to life. At Quantico in 1922: "They only had one field there that was on the east side of the tracks. We came in over about a 30 foot bank, the bank of the river, and the other side had high tension wires. The wind was always cross wind—it was always from the northwest."¹⁹ At Parris Island:

Our field was the old, old rifle range, which was nothing but a pocket handkerchief. . . . Those of us who went to Parris Island, having to operate out of that extremely tiny field, got more experience than anyone in the world. We could go into anything, any size field, that no one in the world could go into, because we'd had to, or get killed. That was the best training that ever was.²⁰

Safety programs were instituted throughout Marine aviation to reduce the accident rate. While unsophisticated by today's standards, these efforts were on a scale commensurate with the number of aviators and the number of hours flown. They included a review of pilot indoctrination practices, the establishment of some standard aircraft flying procedures, and an attempt to reduce the number of unscheduled individual aerial stunt performances. At least one Marine aviator was successful in his safety program. Captain Harold D. Campbell received the Schiff Trophy, the annual air safety award, for having flown 839.50 accident-free hours during the fiscal year 1925-1926. For presentation of the trophy by the President of the United States, Captain Campbell flew from San Diego to Washington, D.C., a flight which was still an accomplishment in itself in 1926.²¹

Marine aviators trained and flew operations in a variety of aircraft most of which they obtained from the Army and Navy, sometimes as cast-offs when the other services adopted newer models. The Marine squadrons sent to Haiti and the Dominican Republic in 1919 deployed with Curtiss Jennies and HS-2L seaplanes. That same year, the Marine Corps received from the Army

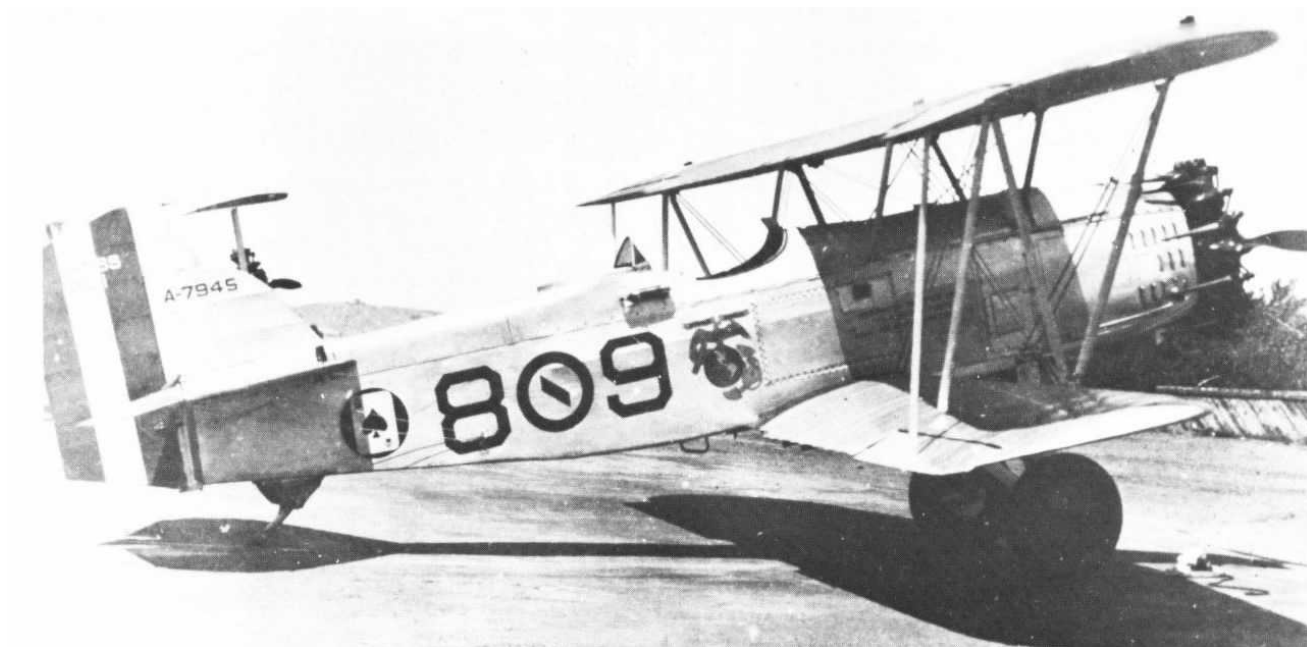
an assortment of surplus aircraft, including 15 DH-4Bs, half-a-dozen Fokker D-7s, and 11 Thomas-Morse Scouts (now numbered MB-3s).

An improved version of the sturdy mainstay of the 1st Aviation Force, the DH-4B performed a variety of missions for the Marines throughout the decade, serving as dive bomber, observation plane, light transport, and even—remodelled to carry one stretcher patient at a time—as a hospital plane. Frequently rebuilt by several aircraft firms, it emerged and re-emerged in numerous versions and guises. The Boeing O2B-1 observation plane, for example, was a DH-4B rebuilt with a metal-framed fuselage.

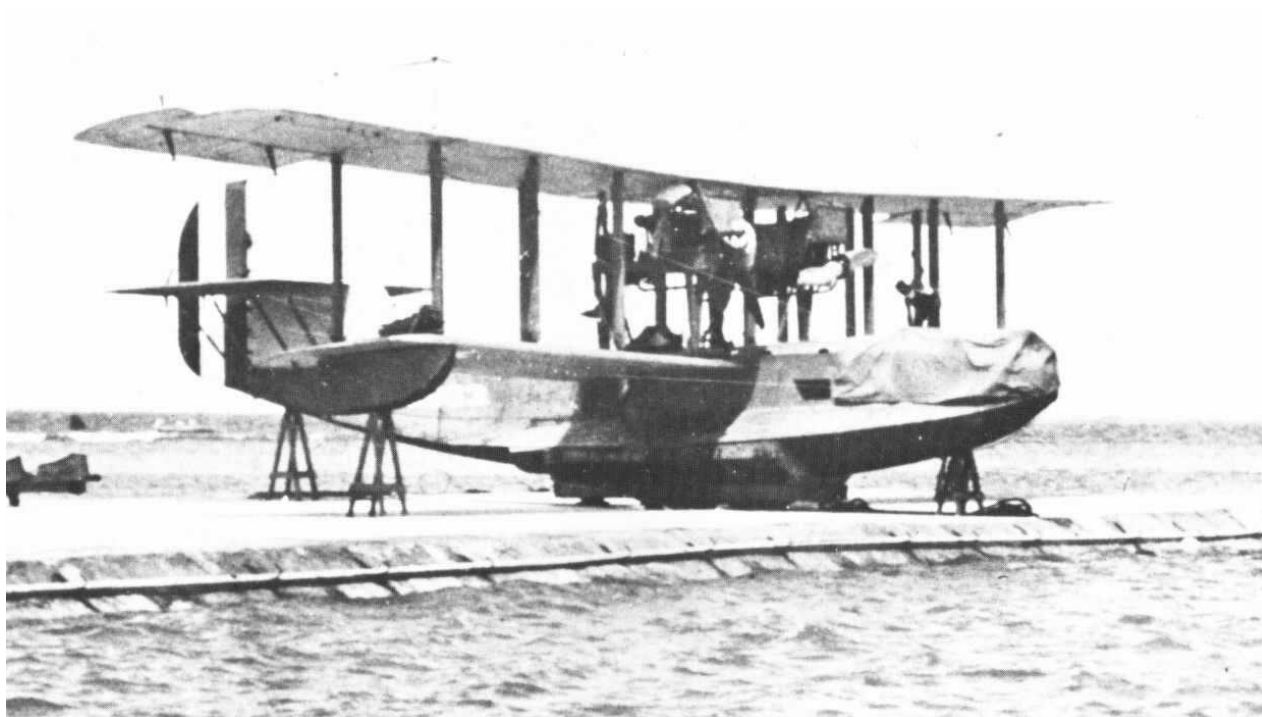
The Marines made little use of the Fokker D-7s. They left most of them in their crates except for two which Second Lieutenant Sanderson and "Tex" Rogers, then a first lieutenant, assembled on their own as personal aircraft. While Rogers called his D-7 a "dream plane," it evidently took some getting used to because after Sanderson and Rogers left for the Caribbean other aviators promptly crashed and were killed in both machines. The Thomas-Morse Scouts, which arrived from the Army in very poor mechanical condition, were the first true fighters to come into the Marines' hands and went to equip Flight F of 3d Squadron at Quantico, the Marines' first specialized fighter unit. Powered by a French rotary engine which developed excessive torque and rudder pressure and hence according to pilots "fast, tricky and as tiring as hell to fly," the Thomas-Morse gave the Marines an early chance to practice fighter tactics.

In 1921, Marine units began receiving the new Vought-designed VE-7 and VE-7SF. Essentially an improved version of the Jenny, this aircraft had been designed during the war as a trainer but also proved usable as a fighter, scout, and observation craft. The Navy purchased large numbers of this machine from Vought and arranged for its production by the Naval Aircraft Factory. While slow, the VE-7 and its scout-fighter model, the VE-7SF, were reliable and maneuverable. The Marines used them for a variety of missions in single-seat, dual-seat, and float plane versions.²²

In the early 1920s, the Marines received a new flying boat and one of the largest bombing planes of the time. The flying boat, the F5-L built by the Naval Aircraft Factory, was the largest and most modern patrol plane the Marines yet had possessed. Powered by two modified high-compression Liberty engines, it had a wingspread of over 103 feet and carried a



The Curtiss F8C-1 and subsequent F8C models served the Marines as fighters, dive bombers, and observation planes. This photograph was taken about 1923. (Marine Corps Photo 529613).



A Marine F-5-L flying boat on Guam, about 1923. (Marine Corps Photo 514933).



Vought O2U-1 "Corsair" in 1928. This aircraft took over many of the missions performed by the O2B-1. (Marine Corps Photo 529952).



A "Corsair" of VO-7M, the squadron which operated against Sandino in Nicaragua. These maneuverable, reliable aircraft more than proved their worth in the Nicaraguan campaign in 1929. (Marine Corps Photo 526365).

gunner, a radio operator, and a crew chief besides its pilot and co-pilot. It was equipped with the latest model radio compass and its engine ignition system had been modified to prevent interference with this sensitive navigational equipment. An extremely heavy plane, the F5-L was very difficult to get out of the water on takeoff. Once in the air, pilots found it hard to maneuver.

In 1922-1923, the aviation group at Quantico received six Martin heavy bombers. Powered by twin Liberty engines, each of these machines had a wing span of 71 feet, five inches, and a length of 46 feet, five inches. Each had four landing wheels arranged side by side to support its weight of 12,078 pounds and carried a three-man crew. A pilot who flew the Martin bomber, which the Marines used mainly as a transport, recalled it as "quite slow, 80 knots I think," but "an easy plane to fly. It was heavy, but it actually controlled very nicely."²³ The Marines also used the big planes to carry parachute jumpers.

Marine airplane strength in the mid-1920s was far from impressive. In 1925, for example, the 1st Aviation Group had 25 operational aircraft, including nine DH-4Bs, six VE-7s of various types, one VE-9 (an improved VE-7), six Martin heavy bombers, two trainers, and one O2B-1. Observation Squadron 1 at San Diego had six operational DH-4Bs and one Jenny. Observation Squadron 2 at Port au Prince had two DH-4Bs and three DH-4Bs, while Scouting Squadron 1 on Guam had three HS-2Ls.²⁴

In 1925 and 1926, after investigations of the Army and Navy air services and the aircraft industry by congressional committees and a special Presidential panel, the Morrow Board, the services adopted and Congress funded a new aircraft construction and development program.²⁵ As a result, Marine aviation along with the other air services received during the late 1920s a succession of new aircraft superior in design and performance to anything Marines had flown previously. These aircraft included a new generation of fighters—the Boeing FB series and the Curtiss F6C series. Of mixed metal and wood-and-fabric construction, these biplanes had top speeds of about 150 miles per hour and service ceilings of about 21,000 feet. They could climb about 5,000 feet in two and a half to three minutes. Capable of making almost vertical dives, planes of the Curtiss F6C series gave naval and Marine aviators for the first time a craft which could execute effectively their new tactic of dive bombing. A Marine who flew the F6C described aircraft of that type as:

... beautiful planes to fly, they were very maneuverable, easy to maneuver, and quite safe, too. I mean you could hardly ever get yourself into difficulty with them, within reason. They'd spin like a top. The easiest thing to get to spin and the easiest to get out . . . All you had to do was let go of the controls and it came out itself. It was a well trained airplane!²⁶

Hardly had the FBs and F6Cs come into service when a new engine revolutionized the design of Marine and naval aircraft. This was the air-cooled radial engine, perfected in the mid-1920s and put into production initially by the Wright Aeronautical Corporation and Pratt and Whitney. Lacking the complicated and trouble-prone liquid cooling systems of earlier power plants, the radial engine was simpler in design, easier to maintain, and could deliver more horsepower for the same size and weight.

Curtiss quickly adapted its F6C-4 "Hawk" for the new engine, and this plane served as the Marines' standard fighter throughout the late 1920s, proving maneuverable and easy to fly. The Marines also acquired a new radial-engine observation plane, the Vought O2U "Corsair," which took over many of the missions hitherto performed by variants of the DH-4. A pilot who flew the Corsair in Nicaragua called it "An outstanding combat plane: very light, had a lot of power in it. . . . When we got that down in Nicaragua we were very happy to get it because of outstanding performance, ease in handling, quick takeoffs and landings."

Other radial engine machines received by the Marines included the Curtiss F7C "Sea Hawk" and the F8C-4 "Hell Diver" which functioned at different times as a fighter, dive bomber, and observation plane. In the form of the new Atlantic-Fokker tri-motor monoplane, supplemented in 1929 by the Ford tri-motor ("Tin Goose"), the Marines developed an air transport capability.²⁷

Maneuvers, Long-Distance Flights, and Air Races

With aircraft that gradually improved in performance and reliability, Marine aviators during the 1920s conducted a wide variety of operations. In this publicity-conscious decade of peace and relative prosperity, they found it necessary to combine serious military exercises with headline-hunting spectacles.

At home stations and overseas, Marine squadrons conducted scheduled training exercises which included annual bombing and machine gun practices. The 1st Aviation Group at Quan-



Having a pre-flight cigarette are, from left: Admiral Moffett, Director of Naval Aviation; Lieutenant Colonel Thomas C. Turner; Lieutenant Bradley; Sergeant Rucker; and Lieutenant Lawson H. M. Sanderson. The Marines flew two planes from coast-to-coast in 1921. (Photo from the Goodyear Kirkham collection).



Goodyear W. Kirkham at the controls of his Thomas Morse Scout (MB-3). (Photo from the Goodyear Kirkham collection).



A Curtiss F6C-4 Hawk in 1928. The exposed cylinders of the air-cooled radial engine contrast with the earlier liquid-cooled models. (Marine Corps Photo 515095).



Curtis Marine Trophy winner Major Charles A. Lutz with a Curtiss "Hawk" F6C-3 in 1927. The triangular pennant on the aircraft's side denotes excellence in gunnery. (Marine Corps Photo 530813).



A Boeing FB-1 fighter on the Marine landing strip at Tientsin in 1927. Aircraft such as this supported Butler's brigade in China. (Marine Corps Photo 514929).



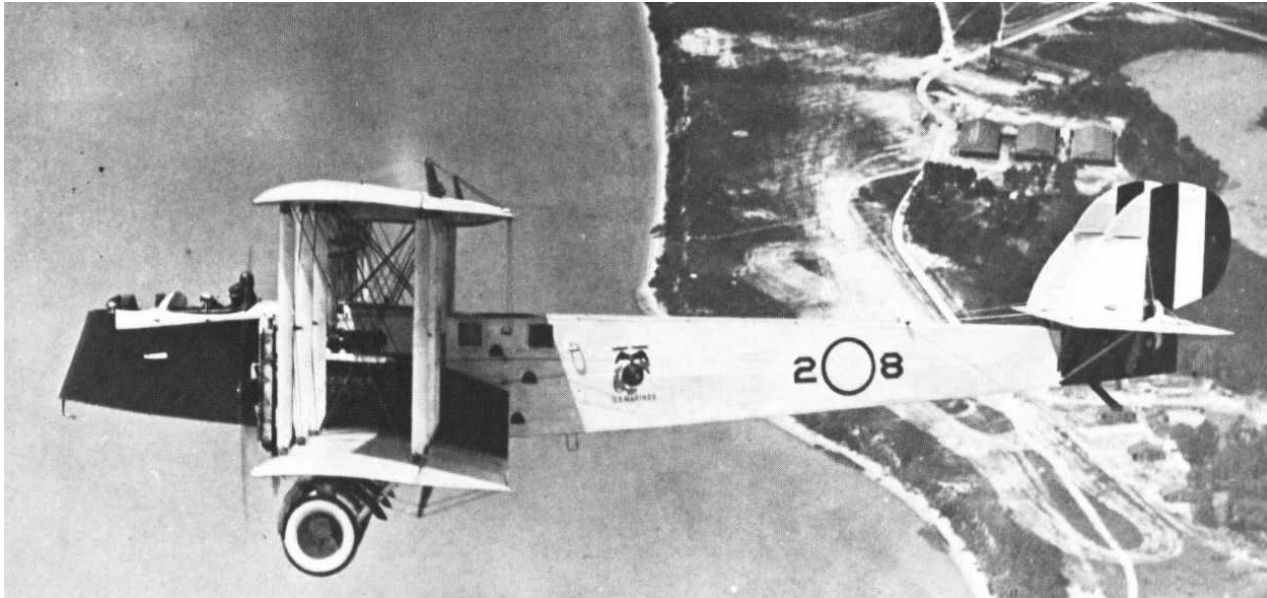
One of the O2B-1s of the observation squadron in China. When first formed, this unit was numbered VO-5M, but by late 1927 had been redesignated VO-10M, as the side markings of this aircraft indicate. (Marine Corps Photo 514928).



Lieutenant Christian F. Schilt, beside his Navy racer after placing second in the Schneider Cup race of 1926. (Marine Corps Photo 524432).



An OL-9 Loening amphibian circa 1933. Marines made extensive use of these aircraft in Nicaragua and elsewhere. (Marine Corps Photo 515519).



A Martin MBT flying over Quantico around 1926. Of the 10 MBT built, at least six were placed with the Marines. (National Archives Photo 80-G-4144).

tico practiced artillery observation, tested methods of air-ground communication, and engaged extensively in aerial photography and mapping. In the summer of 1921, DH-4s of this group took part in the experimental bombings of captured German battleships by which Brigadier General "Billy" Mitchell, USA, dramatized the ability of aircraft to sink stationary and undefended capital ships.

The 1st Aviation Group annually participated with the ground troops at Quantico in the large scale maneuvers instituted by Brigadier General Smedley D. Butler. In the most spectacular of these in 1922, aircraft of the group including three of the big Martin bombers participated in a practice march of 4,000 Marines from Quantico to Gettysburg, Pennsylvania, where the troops re-enacted Pickett's Charge and then conducted a modern battle exercise on the same ground. Logging a total of 500 hours and 40,000 miles in the air, the planes carried passengers and freight and maintained radio contact with the column, executing attack missions assigned by the ground commanders. Following the trend of the times, this operation combined real training with a publicity spectacle.²⁸

While Marine aviation began to develop a coherent training program during the decade, much of the activity of the pilots seemed undisciplined and haphazard by later professional standards. Some post commanders, including Brigadier General Butler, took an interest in aviation and sought to improve the training

and expand the capabilities of the squadrons under their charge. Others, as a Marine veteran recalled, "didn't know what to do with us." Individual pilots enjoyed great freedom of action. As one of them described it:

In the 20's, there were no restrictions. You could go anywhere you wanted to go, any time. You had a cross country packet where you were authorized to buy gasoline. The cross country packet gave you shipping orders if you cracked up, to ship your plane back, if you went anywhere at all. . . . If we wanted to go someplace we'd just go, and never asked anybody's permission or a blessed thing. Just go. . . .²⁹

To demonstrate professional skill, test new equipment and techniques, and capture for their service a share of the decade's stunt-filled headlines, Marine aviators made long-distance flights and participated in air races. Lieutenant Colonel Turner, soon after taking over as head of the aviation section, personally joined in this effort. In April 1921, to demonstrate the practicality of long-distance aircraft deployments, he led a flight of two DH-4s from Washington, D.C., to Santo Domingo, establishing a record for the longest unguarded flight over land and water made up to that time by American Navy or Marine personnel.³⁰

Two years later, Marine pilots led by Major Geiger ferried three of the giant Martin bombers across the United States from San Diego to Quantico. Travelling from California across Arizona, New Mexico, and Texas, then north up the

Mississippi Valley and eastward across Illinois, Indiana, Ohio, and West Virginia, the Marine aircrews took 11 days to make the trip, counting in frequent stops for fuel and repairs. They navigated with Rand-McNally maps and if they became lost, they flew low over railroad stations to read the names of towns off the signs. After a ceremonial welcome at Washington, D.C., they finally landed at Quantico on 30 April 1923.³¹

In 1923, Marine aviators made their most impressive long-distance flight, when two DH-4s flew from Haiti to Saint Louis, Missouri, to attend the National Aircraft Races for that year. Marine Corps Headquarters authorized the flight, which was an attempt to capture for the Marines the distinction of having flown a plane the longest distance to attend the race. Three weeks before the planned departure date of 20 September, two new DH-4s and two Liberty engines were shipped in crates to the Marines' intended starting point in Haiti. The aircraft and engines reached Port au Prince on 15 September, and when they were uncrated and checked, the Marine mechanics found that the engines were defective. Working in shifts for four days, 24 hours a day, the ground crewmen rebuilt the engines, assembled the air frames, and installed dual controls in each aircraft.

At noon on 19 September, the two DH-4s took off from Santo Domingo City. First Lieutenant Ford O. ("Tex") Rogers piloted one of the machines, with First Sergeant Benjamin F. Belcher as his observer. Second Lieutenant Horace ("Hoke") Dutton Palmer flew the second, with Sergeant Peter P. Toluscisk, as observer. All of these Marines came from the air squadrons then stationed in Haiti and the Dominican Republic.

Flying a route that led them past Port au Prince, Guantanamo, and Havana, they crossed to the United States mainland at Key West and then flew on to Washington, D.C., where they landed on 23 September. After a day's rest, they headed for St. Louis, arriving on schedule five days after they left Washington. From St. Louis, they extended their flight on across the continent to San Francisco, at the invitation of American Legion headquarters in that city. Then they flew back from San Francisco to Washington again, where they touched down on 2 November and stopped over to make repairs to the aircraft and install new engines.

On 30 November, they left Washington for their home base in Santo Domingo. The return trip proved uneventful with the exception of a hard landing at Miami by Lieutenant Palmer,



From September to November 1923, 1st Lieutenant Ford O. (Tex) Rogers flew his DH-4 10,953 miles in 127 hours of air time to demonstrate the skill of Marine pilots and aviation mechanics. (Photo from the Goodyear Kirkham collection).

which resulted in a bent landing gear axle. Marine mechanics repaired it by using a car jack, and the flight departed on the final over-water leg to Santo Domingo, where they landed triumphantly on 9 December.

In some two and one-half months, these Marine aviators had travelled 10,953 miles in about 127 hours of actual flying time. They had fallen just short of the 13,500 miles flown by British aviators flying from England to Australia. The exploit dramatically demonstrated the skill of Marine pilots and also that of Marine aviation mechanics, who had put the two DH-4s in such excellent condition that they flew for 110 hours without so much as a spark plug change.³²

Air races became an American institution in



A later model of the Boeing fighter, an FB-3 of VF-1M at the Philadelphia Air Races of 1926. (Nat Archives Photo 80-G-452008).

the 1920s and retained their popularity until the Second World War. Every large state and county fair with any pretensions to success had to have an air race or show. Major national races, such as the Pulitzer, provided the Services with a method of determining which combinations of air frame design and engine produced the best performance and they kept the American public aware of aviation—in particular military aviation—at a time when there was no opportunity to demonstrate its applications in a world-wide conflict.

As was so often true of Marine aviation, much Marine participation in these races occurred under Navy colors, with individual Marine pilots flying one or more of the Navy planes entered. In 1926, for example, Lieutenant Christian F. Schilt, USMC, soon to win the Medal of Honor in combat in Nicaragua, flew one of the three Navy planes entered in the prestigious Schneider Cup race and came in second. Such triumphs, while gratifying to Marines, often were not fully recognized by spectators who failed to realize the Navy aircraft they were watching had Marine pilots. Thus Marines took more satisfaction in the exploit of Major Charles A. Lutz, who captured first place in the Curtiss Marine Trophy Race at Anacostia Naval Air Station on 19 May 1928 while flying a Marine Curtiss Hawk. Lutz achieved an average speed of 157 miles per

hour for five laps over a closed course of 20 miles. Further sweetening the victory, another Marine, Captain Harold D. Major, also flying a Hawk, took third place.³³

Operations in Haiti, the Dominican Republic, and Guam

While long-distance flights and air races caught the attention of the newspapers and the public, Marine aviators were gaining operational experience that in the long run was far more significant for the development of their service. During the 1920s, Marine brigades were sent to the Dominican Republic, Haiti, China, and Nicaragua to protect United States national interests. Marine air units, often added to these expeditions as an afterthought and lacking any clear advance directive as to their role, for the first time had a chance to demonstrate their ability to assist the operations of Marines on the ground. As one aviator summed it up, "We were there and they used us, and they used us to their advantage, and consequently we became a useful and integral part of the Marine Corps."³⁴

Overseas operations began in 1919 when air units were sent to support existing Marine commitments in Haiti, occupied in 1915, and the Dominican Republic, where Marines had landed